COAL AGE

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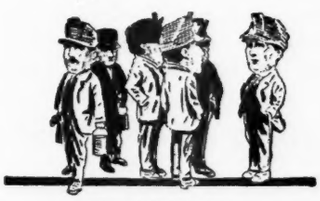
The Greatest Asset

By Berton Braley

Written expressly for Coal Age

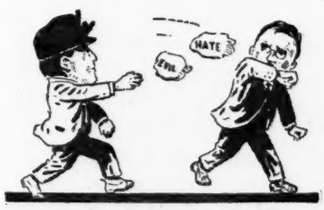
MEN!
Fine men and rough men,
Good men and tough men,
Russians, Hungarians, Slovaks and Wops,
Men of all nations, all breeds and all races,
Men of all natures, all sizes, all places,
These are the assets of mining,
Worth more than cutters or props,
More than the tools we're designing—
Let us remember it, then,
The greatest of wealth is in men!

And whenever by greed or by fraud
The hope in men's hearts is downtrod,
Whenever by force or chicane
Men's rights are neglected for gain,
Whenever the lowliest Hun
Is robbed of his "place in the sun,"
It's a loss to the world, and to YOU
Who trample them down
In mine or in camp or in town.



Men of All Nations

For always and ever it's true
That you get what you give to the world
And you reap what you sow;
And if you give evil and hate,
Why, evil and hate will be hurled
Back on yourself and your kind;
And if you sow rancor and woe,
They will at length be your fate.



Hurled Back on Yourself

Be not blind.
Remember that wealth is in men;
Uplift and conserve them, and then
In time you will earn
A richer and vaster return
From love and from justice and right
Than all you could gain by sheer might
Of avarice, power and greed.
Remember! Take heed!
And hark to this slogan again,
"The greatest of wealth is in MEN!"

Ideas and Suggestions

Taste in Coal Mining

By J. R. Allardyce*

A coal mine is a somewhat bizarre spot in which to look for evidences of taste; but wherever human enterprise pushes its outposts there is a field for the exercise of taste. I have seen exception taken to a too literal interpretation of the fine old saw which requires that what is worth doing is worth doing well, but the spirit of it is beyond cavil.

In the great and important task of producing the nation's fuel an increasing diversity of operations is met. Many men are in favor of the utmost precision and delicacy, and most of them demand some expression of intelligent and self-respecting regard for decency and order.

The approaches to the average mine are not supposed to be in rapport with Ruskin's ideas, but by no stretch of the imagination can many of them be considered as even approximating to what the commonest horse sense would consider orderly arrangement.

Too often the disorder on the surface is symptomatic of much that prevails below, and many mines are no better in the details of their interior development than conditions outside seem to warrant. The confusion on top remains to blazon itself to the world every day; but what is more vitally concerned with efficiency and dividends, in the depths, although it may be suspected, is made apparent only when disaster to life and destruction to property compel an exposure of methods and plans.

Taste is the evidence of efficiency—the last expression of a mastery of details. It gives the halo of beauty to the crocus bud and the mark of intelligent effort to the meanest task.

I'm not going to preach. But when I see a man take pains to whittle a stick into a serviceable spatula to handle the lard fuel for his lamp, I look around for further evidences of taste and usually find them.

Such a man usually keeps a correct bearing and a well-trimmed rib in his entry. His gob wall is tastefully packed, his props well aligned and uniformly spaced. His tool chest, where his supplies are kept, is a revelation in the order and condition of its contents. His track is well laid and free from accumulations of coal and slate, and every tool he possesses is fit as a fiddle for its peculiar duty. And to see him cut, and roll, and trim, and prime the materials for a charge is to be witness to an operation of which he has the knack and the mastery.

He is no hustler in the tearing, swearing, scare-my-neighbor sense of the term. Cool, self-possessed and steady, he has fewer accidents and more lump coal to his credit at the end of the year than the fellow who blazes a meteor path through the pay and leaves a shining furrow of aggression and disorder in his wake.

Any sacrifice in the interests of taste is always a victory for efficiency and a booster for results.

Old Billy Hoy was a tracklayer with a penchant for appearances and a reputation opposed to dispatch. Having laid a switch at one time under unusual pressure, the result was far from squaring with his exacting views. Worrying in his sleep, he got out of bed and descended into the mine three hours ahead of starting time and, taking up the switch, relaid it with soothing deliberation to his complete satisfaction and taste and—let it be noted—at his own expense.

In the same mine an old sailor used to be employed as a timberman, off and on, at intervals of a year or so. On returning after any prolonged absence, he used to go around and inspect his previous jobs and swagger afterward over their appearance and condition.

A piece of well-laid track, well-driven entry or well-timbered gangway is a legitimate source of satisfaction to the workman with his heart in his work. And to many to whom the term "efficiency" is a nebulous and unintelligible sound, its proper and familiar superlative—taste—will continue to be the dominating ideal that nerves the wrist and gives pith to the shoulder in the exacting execution of the commonest task.

*Saginaw, Mich.

The Problem of the Loader

By Josiah Keely*

With companies that analyze the tendencies of their various labor departments it has been a matter of no little concern to note how day labor has increased out of all proportion to the number of loaders. This increase is due somewhat to the fact that the fixed cost of keeping larger developed coal areas safe and ready for loaders is not justified by a corresponding increase in loaders. It is due also to the fact that companies in many instances have converted experienced loaders into daymen. But this does not account entirely for the scarcity of loaders. The large number of daymen about the mines points to other conditions than the necessity of maintaining extensive developed territory.

This scarcity of loaders can hardly be laid to the demand for labor in other industries. The condition seems to be too general to admit of so simple a cause. Not only have loaders taken up daywork at the mines, but many of them have abandoned mining, which would seem to indicate something at fault other than the natural selection of an occupation. Thousands of young men try loading coal for a short time, only to become discouraged; and then they turn to other fields of labor. So we are confronted with the problem of making this occupation attractive to them. There is by no means a lack of novices, but they do not remain with us long enough to become sufficiently skilled to earn good wages.

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In the last few years, in order to maintain the necessary organization of daymen during periods of car shortage and slow orders, we have been inclined to favor them on "off" days to the extent that their average monthly earnings have exceeded those of loaders. As a result two applications for a "company shift" are now received for every one for loading. The adoption of a new loading rate, on the other hand, occasionally depletes the ranks of the daymen so seriously as to hinder the operation of the plant. The adjustment of loaders' rates to those of the day laborer is a delicate one. It requires a nice balance of wages to obtain the required stability of labor, and even where this has been carefully worked out it is often disturbed by personal factors.

It may be that causes of this nature have lately given coal loading undue unpopularity. In many mines there is almost a caste difference between the loader and the man with a "company shift," with the higher rank placed on the latter. In reality the loader is the superior man on the job, the driver, the slateman and the timberman being equivalent to the bricklayer's hod carrier and mortar mixer; and until something is done to bring him into his own, the loader will be difficult to obtain and still more difficult to hold.

The mining machine has considerably depreciated the dignity of the loader, and it is with much pride that an applicant for a position announces himself a *pick* miner. But the solution of the loader problem does not lie in merely preserving his dignity. He will experience little difficulty in this respect if his pocketbook is more robust. And this robust condition, of course, should be effected rather by offering him the opportunity to increase his earnings than by a direct advance in rates.

The experienced miner, when shown a working place, takes in at a glance its advantages and disadvantages, the height of the coal, the width of its face, the condition of the roof and how the coal is to be worked with reference to butts and faces. He knows he can get a job at any mine in the district, and consequently he takes only what appears promising.

The "green" loader, however, is often given a place that the old miner would have rejected on sight—some waterhole, tough crosscut or place partly squared up. And there are sections in almost every mine where the coal works much harder than in others, to say nothing of "hoodooed" territory. It is natural, of course, that the last comer should receive what is left; but it would be better policy to pay an old miner a premium for working an undesirable place than to depend on getting it worked out piecemeal by assigning it to green loaders in the hope that it will take each of them several days to learn of his predicament.

When it is necessary to start a considerable number of new loaders, it is difficult for a foreman that has long been in want of them to use perfect judgment. The management often hires them before it is prepared for them, the working places having been allowed to stand uncut, with no track, or not timbered. Perhaps no extra driver has been employed against such an emergency. But rather than lose the chance to get loaders, the management assigns the novices to undesirable places, a driver is overloaded in another place, and some of them are paired. They are led up to the face, introduced to the car and the coal and left to become acquainted. After a short struggle the majority of them quit.

It may be true that the trained loader, self-taught, having come up through great tribulation, is the better for it, but the present generation of loaders, with so many other industries offering them profitable work, will not tolerate a self-teaching period at an actual loss in wages.

The remedy lies in a company territory provided especially for new loaders. So far it has been given only an imperfect trial. It must come into general practice in order to insure the success of our training new loaders.

A Simple Reflector for Use in Underground Surveys

A useful and easily constructed reflector to be used by any one engaged in making underground mine surveys can be made as follows: Take a piece of any good strong wire and bend it in the form of a circle with a handle attached, and fasten a piece of tracing cloth as shown in the accompanying drawing. This device, when held back of a plumb bob and string with a lamp behind it, will greatly diffuse the glare of the light and give the transitman a perfect shadow for a sight. The tracing cloth can be removed and replaced when burnt or otherwise injured. This reflector has many advantages over the ordinary tin reflector in that no light is necessary for the instrumentman while taking a sight. It is cheaper and gives better results. Any size of reflector may be used to fit any particular case. However, it has been discovered in actual practice with this device that a reflector 6 in. in diameter with an 8-in. handle is both convenient and satisfactory. Other diameters and handle lengths might however be made with equal ease and be more advantageous.

THE REFLECTOR IN USE

BY THE WAY

Two captains sink the ship.

In one way truth and oil are similar, they both come to the surface.

Whenever a man lays the foundation of his own ruin, he will find that others will build on it.

Individuals as well as organizations, when blessed with success, should remember that "the water that bears the boat is the same that swallows it up."

Next Week

The Aug. 19 issue of "Coal Age" will contain an article on "Chemistry in Coal Mining," by A. G. Blakeley, chief chemist of the Philadelphia & Reading Coal and Iron Co. Any man engaged in mining coal who fails to gather in the facts presented by Mr. Blakeley next week is doing himself and his company an injustice.

Coal-Mining Methods in Utah--II

By A. C. Watts*

SYNOPSIS—This article, which is the second of the series, describes various methods that have been employed for simultaneously working two or more superimposed coal beds.

Four distinct methods have been employed in Utah for working two seams with little intervening strata between them.

In the first scheme the lower seam was entered first by slope levels and rooms driven as described in the foregoing room-and-pillar scheme [*Coal Age*, Vol. 10, p. 214], but no pillars were taken out. For a considerable part of the work entries were driven on water level. Then the upper seam was entered by a short rock tunnel from the lower bed and a slope driven in it with entries over the centers of the slope pillars of the lower seam. Levels were started over the pillars of the levels below and driven on water-level grades. Rooms were turned at regular intervals, but no attempt was made to have them located over either rooms or pillars below.

The intervening strata in this instance varied between 18 and 35 ft. In some places subsidence of the upper seam was observed over excavated areas of the lower bed, but as a general rule the upper seam was comparatively undisturbed and a fairly good recovery was made.

The main difficulty occurred when pillar drawing was started in the upper seam. The lack of uniform support underneath gave an uneven distribution of weight of cover with the result that some pillars were difficult to extract. In the second scheme the strata between the two seams

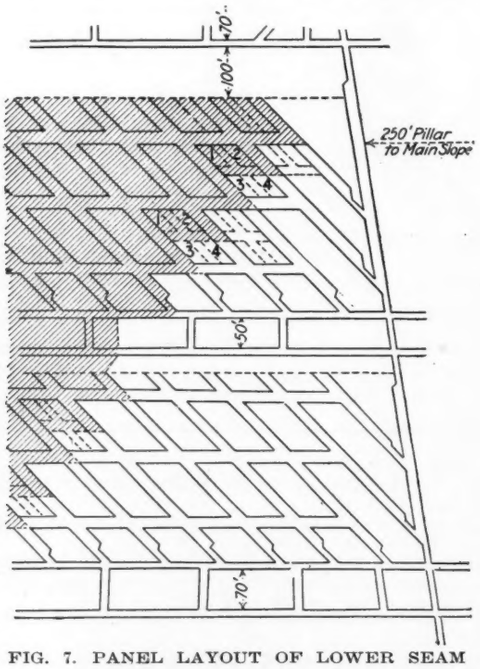

FIG. 7. PANEL LAYOUT OF LOWER SEAM

had gradually decreased from 7 to 3 ft. In some old workings caves in the upper bed had broken through these strata and proved that they were not strong enough to safely work the measures independently of each other. The lower seam, being much thicker, was then laid out in panels with two entries to a panel, as shown in Fig. 7, rooms 18 ft. wide driven at 45 deg. from the entry with 50-ft. pillars, and crosscuts on line at regulation intervals, as prescribed by law. From 2 to 3 ft. of coal was left up in the entries to preserve the roof. When entries reached

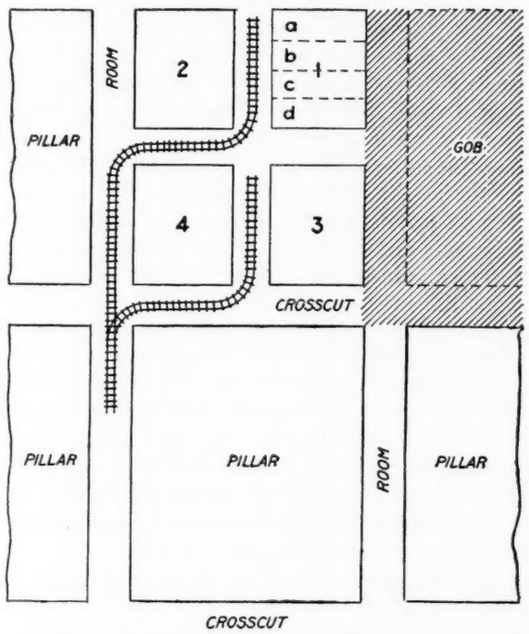

FIG. 8. METHOD OF SPLITTING PILLARS

their limits, the pillars in the lower seam were taken out along a diagonal line, the strata above allowed to cave and the upper seam taken out. It was generally necessary to thoroughly timber the roof above this upper seam, as in places it was quite fragile.

The success of this method depends almost entirely on the character of the roof of the upper seam. If it stands for a few days before caving, a large percentage of the upper bed can be recovered and a comparatively large area—several pillars at a time—can be worked. But if the roof caves readily and quickly, only a small area can be worked at a time and at that the recovery of the upper seam is problematical.

It is sometimes necessary to bring down the parting rock by shooting. To do this, holes 4 ft. apart are bored as rapidly as possible and all shot at once by electricity. Entry into this area is then made as soon as possible and the area thoroughly timbered. If the top coal seam is down the roof above it is timbered, but if the coal still hangs it is supported until it can be taken down as fast as it can be loaded.

Such methods save much of the upper seam that otherwise would be lost. The expense of tracks, entry driving, room turning, stoppings, overcasts, sprinkling, electric shotfiring, etc., is eliminated for one seam, but the expense of timbering is increased. Whenever work on a block of the upper seam is started, it must be rushed as much as possible even to working night shifts; track material,

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props, etc., must be close at hand ready for use and the loaders must be kept constantly supplied with cars.

In other places of the same mine, where the roof and upper seam demand it, the blocks of room pillars made by original crosscuts are split as follows (see Fig. 8): A crosscut is first driven through the center of the pillar paralleling the original crosscut. At the center of this split a crosscut is driven up the pitch parallel to the rooms, thus dividing the original block into two quarters and a half. The upper inside quarter is taken out first. Before the last of the upper quarter is taken out, the lower half is split by a crosscut driven up from the original crosscut, dividing it into quarters, which are taken out the

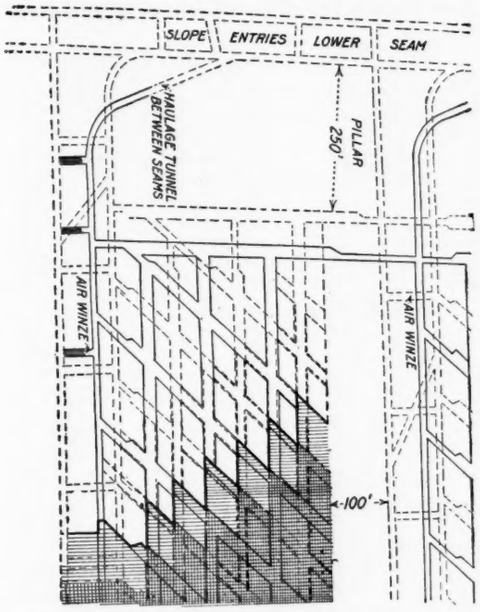


FIG. 9. LAYOUT FOR TWO SEAMS CLOSE TOGETHER

same as the first were. The upper seam is recovered when retreating.

The third method is used where from 7 to 12 ft. of parting occurs between the two seams. The first development work is done in the lower seam, in which are maintained the main haulage, hoisting, traveling and air ways. As shown in Fig. 9, the main slope is driven on the pitch with a 50-ft. pillar between it and its aircourse. The entries are made 10 ft. wide and from 7 to 8 ft. high, leaving top coal to protect the shale above from weathering. Level entries are turned at intervals of 450 ft., with 70-ft. pillars between the haulage and aircourse levels.

Rooms are turned at 45 deg. and driven 18 ft. wide with 100-ft. pillars. The first rooms of each level are driven up the pitch parallel to the slope and are made into traveling ways. Between the first rooms and the slope 150-ft. pillars are left. Short rooms are driven off the "straight-up" rooms to form the triangular pillars between them and the diagonal rooms. Crosscuts between rooms are driven on sights at regular intervals and on line.

To enter the top seam in this method, tunnels about 225 ft. long are driven from the bottom seam off the slope at an angle of about 30 deg. to intersect the upper seam above the center of the pillar between the haulage and aircourse entries of the level in the bottom seam. This tunnel is made the parting for the upper seam. It is first driven in the coal of the lower seam until within about 50 ft. of an intersection with the haulage entry of the level in the lower seam, or until a fair working face is had in the upper seam, and then the rock above is shot down to form the desired grade and give proper height. The tunnel is then driven in the upper seam and rock below until destination is reached.

This method gives considerable coal, which pays in part for the work and also gives much quicker development. Only one entry is driven in the upper seam and this in such a manner that it will leave a pillar of 25 ft. between it and the haulage entry of the lower seam.

To provide ventilation two schemes are adopted. One is to drive short blind crosscuts between crosscuts of lower levels down pitch in the upper seam until they come over the air course of the lower-seam levels and then to sink a short shaft through the strata below or an upraise from the lower level. The other is to start these blind crosscuts over crosscuts in the lower seam and drive them only about 10 ft. before sinking the shaft. As the entry progresses, the shafts are closed as successive ones inby are made, just as is done in crosscuts between entries.

Rooms in the upper seam are driven 18 ft. wide and directly over the center of the room pillars of the lower seam. Crosscuts between rooms are staggered from the crosscuts below. The ground stands in splendid shape with little timbering until time for pillar work. This permits pillar drawing to be started from the inside end of the levels and be accomplished on the retreating system. Pillar work is started first in the upper seam and is kept one-half of a block ahead of the workings in the lower seam.

The crosscuts between the rooms divide the room pillars into trapezoidal blocks with sides next to the rooms 120 ft.

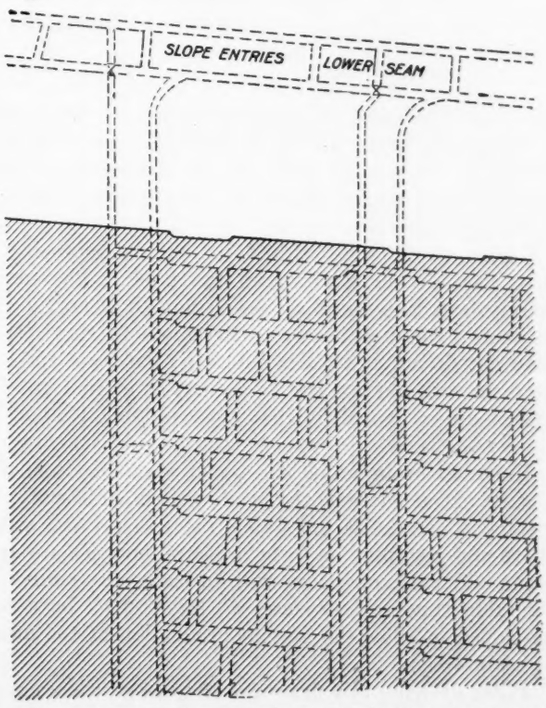


FIG. 10. WORKING A BED UNDER A WORKED-OUT SEAM

long and those next to crosscuts 140 ft. long. When starting to split a block, crosscuts are driven along its main axes, both being started at the same time. This divides the block into four stumps, which are numbered 1 to 4, beginning with the upper inside stump.

These blocks are then taken out in the numerical order, beginning each block on the upper side. If the upper side is hard to get out on account of caves, work is started from the inside split. Whenever conditions warrant the splits are cut by undercutting machines. Props with heavy caps are placed each side of the tracks two and three rows deep if necessary. Crossbars are also used where conditions demand them. All pillar work in this mine is under the constant supervision of pillar bosses, who devote their entire time to superintending the work.

The fourth method is employed in an area where the top seam had been extracted first. The parting strata between seams in this section measured from 7 to 13 ft. thick. After the top seam had been extracted, the area

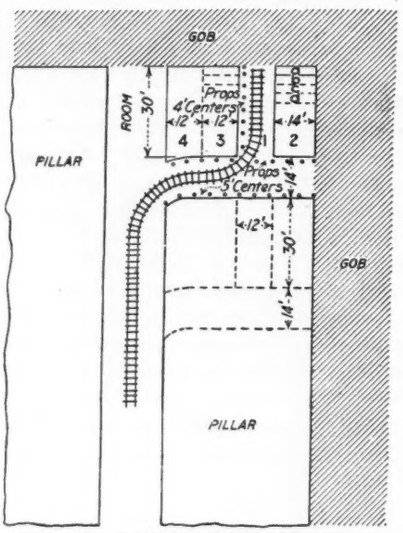


FIG. 11. PILLAR DRAWING IN A FLAT SEAM

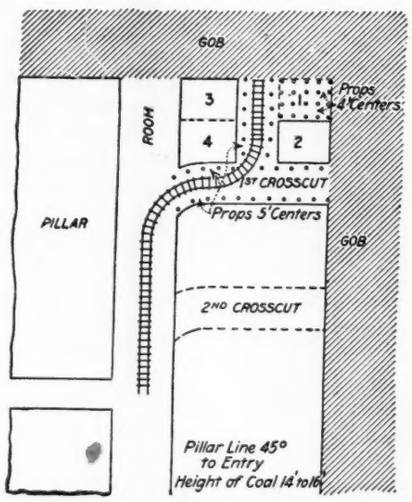


FIG. 12. METHOD OF PILLAR DRAWING

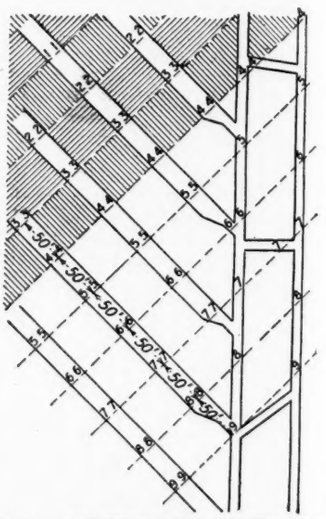


FIG. 13. CONVENIENT NOMENCLATURE OF PILLARS

was allowed to stand about two years before starting work in the bottom bed. Entries were then driven with 50-ft. pillars in the bottom seam at the regulation distance between them and extended to their limits before any rooms were turned.

Rooms 18 ft. wide with 65-ft. pillars between them were then driven straight up the pitch. The idea in giving them this direction was to put all weight directly on their longest dimension. Crosscuts in this instance were not driven at regular intervals, but were spaced to conform with the law and to conditions of roof and coal. Pillars are extracted by the same splitting method previously described.

Under areas in which the upper seam had been completely extracted and the roof settled uniformly, this method is successful, but unless there is uniform settling above and resultant uniform pressure, bounces are apt to occur and roof conditions will be bad. It requires considerable time and expense, as large areas have to be developed to allow the normal production of the mine to be maintained.

Pillar drawing in a flat seam 12 to 14 ft. thick has been successfully accomplished as follows: The area lay between two parallel faults about 2,000 ft. apart. The cover was approximately 800 ft. thick and no upper seam existed. The roof broke fairly well when props were removed. A crosscut 14 ft. wide is driven across the pillar so as to leave a block 30x50 ft. As shown in Fig. 11 this block is split by another crosscut and block No. 2 is taken out from the gob at the top, props being set every 4 ft. The coal is undercut by hand and shot down with black powder. When block No. 2 is all out, the track is taken up and moved to block No. 3, which is then driven up, all props in blocks Nos. 1 and 2 being pulled except the row adjacent to rib of block No. 3. Block No. 4 is taken out from the top and all props pulled.

In this mine from 3 to 6 ft. of coal is left up in all advancing work to protect the roof. This roof coal is all taken down in retreating. When crosscut splits in pillars are made preparatory to pulling the pillars, the full height of the seam is taken.

Pillar drawing in 16-ft. coal with 400 to 1,000 ft. of cover, no top seam and the roof breaking well when props are removed, is accomplished as follows: Rooms are driven straight up the pitch, which averages about 10 per cent. These are about 400 ft. long. In retreating, a pillar line making an angle of 45 deg. to the entry is maintained, giving about 6 or 7 pillars at a time. A crosscut is driven through the pillar about 30 to 35 ft. from the end, cutting off a block about 25 to 30 ft. by 50 ft. This block is then divided by another crosscut, as shown in Fig 12. Blocks Nos. 1 and 2 are drawn by end-slicing, beginning at the top end of block No. 1. Props are placed on about 4-ft. centers, and after blocks Nos. 1 and 2 have been removed and track taken up, they are pulled and the area allowed to cave. Blocks Nos. 3 and 4 are removed by end-slicing from the room, track taken up and props pulled.

While this work is going on, another set of men have been working in a second crosscut lower down the pillar, so that they are starting on the stumps by the time work on stump No. 4 is nearly finished.

It is worthy of mention that the size and systematic placing of props in this mine has an important bearing on the successful recovery of the pillars. Until heavy pine props were used, trouble with pillars was liable to occur at any time. Now, props as large as 10 in. in diameter at the small end, with correspondingly heavy caps and in some places crossbars, are used and set at regular distances.

Quite a large percentage of these props are recovered and used as many as three and four times, while the safety factor is largely increased, the percentage of recov-

ery is greater and the product is of better quality as regards size.

To maintain a proper pillar line it is customary in some mines to mark pillars at regular distances. The proper line is determined upon, and pillars are marked with a white line every 50 or 25 ft. The first pillar line on the inside is numbered 1 (see Fig. 13), and the vertical line on each pillar it intersects is given the same number. The next line, 25 ft. below the first, is marked 2 and each pillar intersected by it is given the same number, and so on until the panel is finished. The mine foreman or pillar boss can thus easily determine each day the progress of the pillar work and is able to keep the pillars in proper alignment.

Still Other Methods of Robbing

Another method sometimes employed is to drop down 25 to 30 ft. from the end of a room and drive a 14-ft. crosscut through the pillar.

The pillar is then split up its center, as shown in Fig. 14, and sliced in quarters, leaving a thin stump of coal around the edges of the block until the last, so as to prevent gob rolling in and being loaded with the coal.

A modification of scheme No. 4 is as shown in Fig 15. This is preferable to the other one in some ways, as it does not split the pillar into so many small stumps. The original pillar, 100 ft. long by 120 ft. wide, is divided by a crosscut parallel to the original crosscut and the upper half is taken out by slicing, beginning at the inside. As before, a thin section of coal is left to prevent the loading of gob, and a row or two of props is put up along the side of the coal. Before pulling tracks and props, most of this thin section is loaded out.

Three seams have not yet been worked simultaneously, although at one mine three seams have been worked in the same area, two beds working at the same time. In this

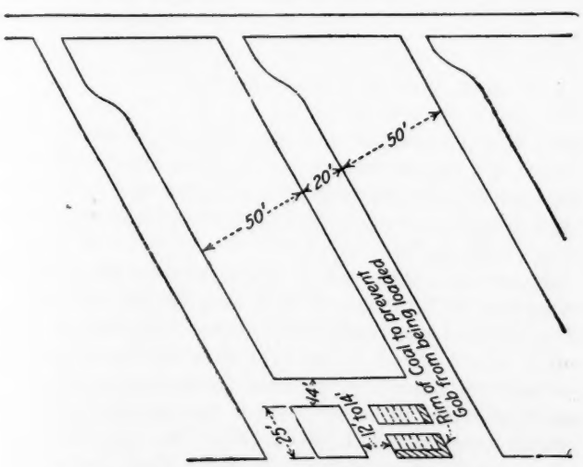


FIG. 14. METHOD OF SPLITTING A PILLAR

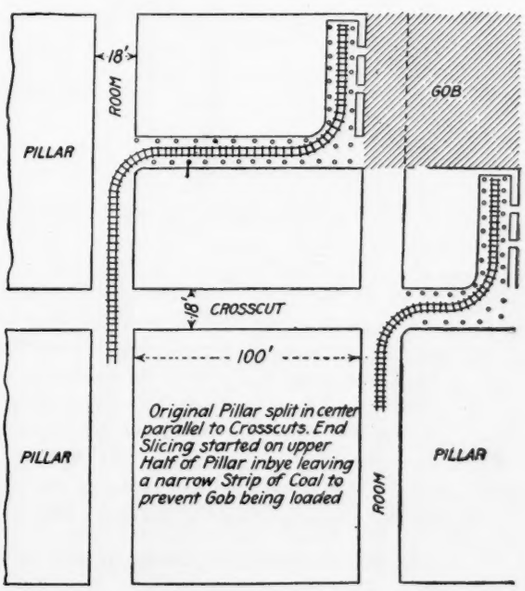


FIG. 15. ANOTHER METHOD OF DRAWING PILLARS

case the lower seam, ranging between 4½ and 6 ft. in thickness, was first worked out and abandoned, with the exception of some main entries, before work on the upper beds was started. The first workable seam above was from 4½ to 6 ft. thick and lay 140 ft. above the lower one. Above this was another seam between 6 and 10 ft. thick lying from 7 to 41 ft. above the middle seam.

The lowest seam was first worked out by the room-and-pillar method, and then the middle seam was entered by rock-tunnel inclines with 20 per cent. grades. By driving these tunnels from the lower seam in the direction of the pitch of the measures, their lengths were kept to a minimum.

After the middle seam was struck, the grade of the main tunnel was decreased to 5 per cent. and continued just far enough to permit the landing of a trip above the backswitch turnout to the middle seam. A main haulage entry with complementary aircourse was then driven in the middle seam along the direction of the strike, and on both sides of the rock-tunnel inclines. Barrier pillars 150 ft. thick were left above and below this pair of entries, and the chain pillar between them was made 50 ft. in thickness. Raises were driven off this main haulage entry dividing the area into blocks 2,000 ft. wide, giving 1,000-ft. widths to work each side of the raises.

The regulation room levels were then driven off each side of the raises. Rooms driven on faces of the coal from these levels have a length of 350 ft. and a grade of 6 per cent. During the development of this seam prospecting of the upper seam was accomplished by hand drilling. When the limits of workability of the upper seam were determined from the advancing faces of the middle seam, mining in the middle seam was either carried on so as not to endanger the seam above, or abandoned entirely.

The upper seam was entered by driving a rock tunnel from the haulage road in the middle seam. When the upper bed was struck, a main haulageway was driven in it along the strike and raises driven off it as was done in the middle seam. Where it was necessary to work over the middle seam, rooms and entries were driven over the pillars of corresponding workings below, as the strata did not justify driving room over room or entry over entry.

It was noticed that in areas under which the lowest seam had been completely worked out the mining of the middle and upper seams was very easy; in fact, it was easy pick work which required little shooting. The use of mining machines in some places had to be abandoned, as the coal would settle down on the cutter bar. The percentage of lump coal in some of these areas was not

so great as in more solid coal, this being caused solely by settling.

The natural thing to do is to criticize the working of lower seams first, but anyone knowing the true state of conditions would not criticize. The middle seam was not found to have attained workable thickness until the main entry of the lower seam, together with all workings off it, was a mile from the mouth of the mine. Here the lower seam showed indications of thinning, and a short distance farther in did thin until mining was stopped.

As the lower seam thinned out, the middle seam thickened, so that at its maximum thickness it was over a portion of the lower seam too thin to be worked. About 1,800 or 2,000 ft. farther in from the place where the middle seam attained workable thickness the upper seam was thick enough to warrant mining. At this distance from the mouth of the mine the topography of the country was such that no opening from the surface could be had.

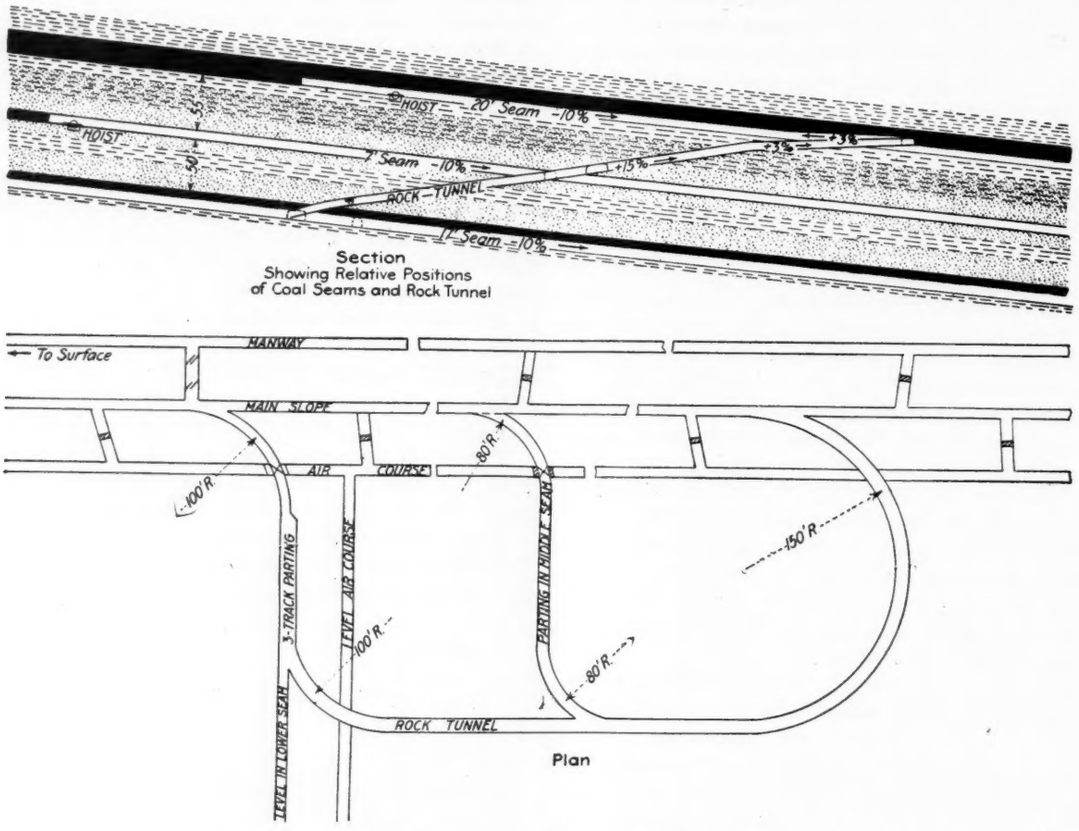


FIG. 16. METHOD EMPLOYED IN WORKING THREE CONTIGUOUS COAL BEDS

A Plan for Working Three Seams

In another mine in the same county preparations are being made to work three seams at the same time. Here the bottom bed varies between 15 and 20 ft. in thickness. From 50 to 60 ft. above it lies another seam 7 ft. thick, and above this middle seam 50 to 60 ft. is the top seam, which will average about 18 ft. in thickness. The main workings are at present in the lower seam, which is opened by a slope from the outcrop high above the tipple. This slope is driven directly on the pitch.

Several levels down from the mouth of the mine a rock tunnel was driven off a level in a parallel direction to the main slope (see Fig. 16). This was given a grade of 15 per cent. up, which with the 10 per cent. pitch of the strata amounted to 25 per cent. in gaining elevation between the seams. Near the top the tunnel was turned on a radius of 150 ft. to bring it back toward the main slope in the lower seam, and the grade was reduced to 3 per cent.

The floor of the top seam was struck at the end of the curve over the main slope, and a slope was driven up and down the pitch from this point directly over the main slope. A hoist lowers the cars from the top seam through the tunnel to the parting in the level in the lower seam, from whence they are hauled by the main hoist outside the mine to the surface.

Because the intervening strata between seams in this mine are 50 ft. thick and over and consist for the most part of hard sandstones, the rooms and entries of the upper seams will be driven over those of the lower. This method will in all probability work successfully. The main slope in the lower seam is driven wide and has a double track laid with 50-lb. rails. At present the cars are run on the two center rails of the slope, but when the upper seam workings warrant it both tracks will be used, one for the lower seam and one for the upper.

The middle seam is entered from the rock tunnel and will be served by the hoist in the upper seam. In the lower seam three main entries are driven—one used exclusively for haulage and intake air, one for a return aircourse and one for a traveling way.

In European Mines, with plenty of waste for gobs and packs, coal seams as thick as 10 ft. are worked by the long-wall method. With this system, less timber is consumed and more lump coal is produced.

Extracts from a Superintendent's Diary

A young man came into our camp yesterday to solicit subscriptions for one of the popular monthlies. He expected to stay a week or more, but left today in disgust. I am always interested to know what my men are reading and so requested him to inform me how he got along with his canvass. This he willingly promised to do; the fact that I headed his subscription list may have had something to do with the matter. He assured me today that had it not been for the report promised to me he would have left last night, but he could not get up courage to tell me that he had decided to give up after working only one day.

I had not expected that he would obtain very many subscriptions. However, I was surprised by his complete failure and the remarks that he made in commenting on it. He has a rather extended experience in subscription work, but this was his first attempt in a mining community. Judging by his conversation, he will steer clear of mining towns in the future.

What interested me most was the information that he picked up covering the literary tastes of our citizens. To hear him tell it, the high-class monthlies are almost unknown to our men and women. Occasionally he had canvassed towns in a similar predicament, but what was more startling to him was the discovery that we do not even boast a *Saturday Evening Post* agency; in all of his previous travels he had never encountered such a town. Nor was that all; not a single family that he called upon owned a set of encyclopedias and only one seemed to have use for an atlas. Out of curiosity he tried to get a line on the Government publications that were most popular with our citizens and found that with the exception of the Bureau of Mines publications and the bothersome, tiresome speeches of the congressmen that no one can escape, none had ever been requested; and very few seemed to know that such publications had an existence, and could be obtained just for the asking.

For some time I have been threatening to get a line on the Government publications because some of the popular weeklies and monthlies have been calling attention to them in a way to arouse my interest. Because of the young man's apparent familiarity with these publications I decided to find out what he knew about them.

To hear him tell it, there is hardly a subject of current interest that has escaped attention of the Government experts, and the booklets that they have issued must be of absorbing interest.

For example, all of the diseases, and especially the contagious diseases, that are forever springing up in mining communities are fully covered in bulletins; and these bulletins have been used as textbooks by physicians. Along with these bulletins on diseases a number of health bulletins have been issued covering such subjects as exercise, care of children, sanitary advice, disinfectants and even shower baths.

Getting away from health subjects, there are books on history and biography, astronomy, wild animals and birds, poultry, dogs, cooking, prohibition and woman suffrage, and so on *ad infinitum*.

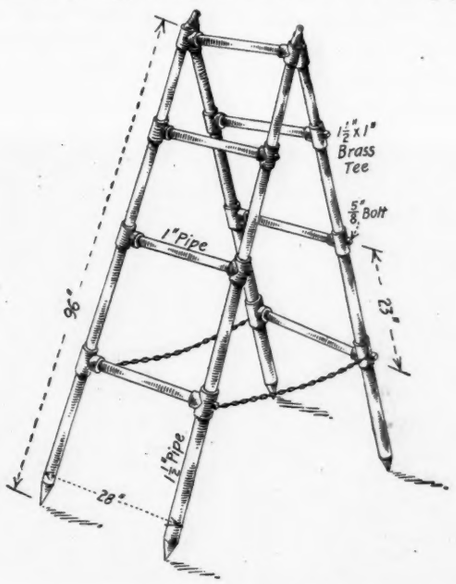
Several bulletins have been issued covering the possibilities of drug farming and the value of common weeds; most any boy could earn a few dollars occasionally by gathering the weeds in his backyard that have medicinal properties.

Uncle Sam's bookshop will certainly hear from me in the near future and likewise it will probably hear from a number of our citizens.

Ladders Made from Short Pieces of Pipe

Herewith is shown a new form of ladder for use in boiler-erecting and car shops for men working on locomotives, boilers or cars. Two such ladders are often used with a plank reaching from one to the other for men to stand on. This type is considered the best, as it is strong, safe and economical, says Joseph K. Long of Renovo, Penn., in *American Machinist*.

It is built of pieces of 1½-in. pipe about 21½ in. long, which are generally too short for other pipework.



BOILER-SHOP LADDER MADE OF PIPE

The pipes forming the rungs are a little longer and are of 1-in. diameter. Sixteen 1½x1-in. brass T's are used in building this ladder, together with eight ⅝-in. bolts, each of which goes through rungs and T's. The ladder is hinged at the top as shown, and pointed irons are screwed in the pipe at the bottom. There is also a chain to prevent uprights from sliding and the ladder from falling.

This design is somewhat heavier than the old wooden ladder, but does not need any repairs. It is more solid and is safer in every way.

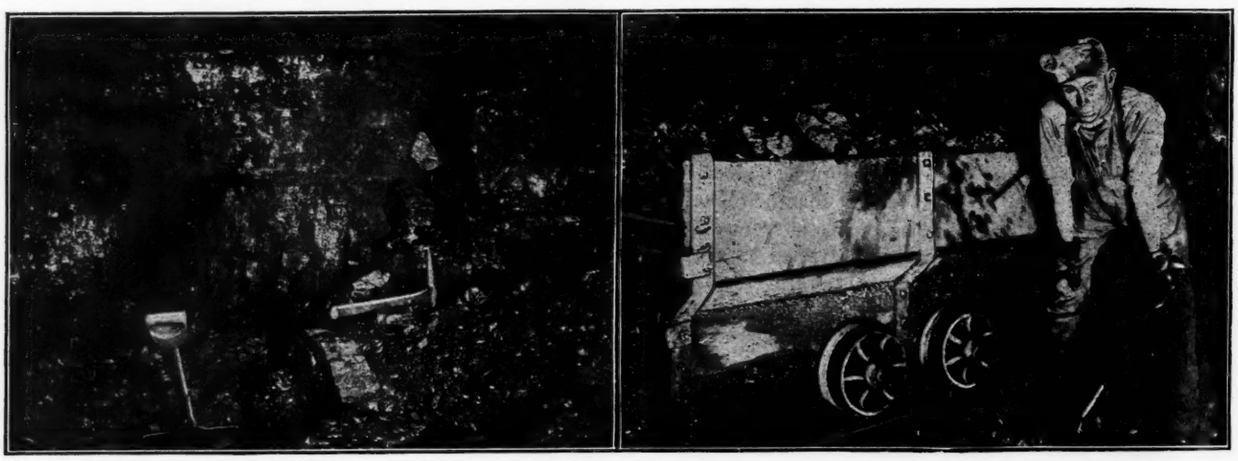
Business Conducted Without Profit—In an industry that sells its product in every state in the Union, figures received covering the year 1914 showed that 27 of the larger manufacturers, each shipping over $100,000 worth of goods a year, with an aggregate capital stock of $9,000,000, bonds and other indebtedness of $3,500,000 and total sales of $8,500,000, had a net income of only $300,000, which is 3¼ per cent. on the capital stock, or 3½ per cent. on the sales. Only $69,000 was charged off for depreciation, and yet this amount was deducted by only 12 of the 27 concerns, which represented an investment of $4,500,000 and sales of $4,000,000. The other 15 concerns, with an investment of $8,000,000 and sales of $4,500,000, did not charge off one penny for depreciation.—E. N. Hurley, vice-chairman, Federal Trade Commission, at 1916 meeting of Rubber Club, New York.

The Elkhorn Coal Co.'s Plant

By W. B. Webb*

SYNOPSIS—A short description of a new operation in the rapidly developing coal field of eastern Kentucky.

At Kona (Mater P. O.), in the Boone's Fork coal field of Letcher County, Kentucky, on the main line of the Lexington & Eastern R.R., the Elkhorn Coal Co. was organized last year by J. Henry Hall, S. L. Bastin and others, with sufficient capital to carry on a coal development. A boundary of coal lands was leased from W. H. Potter. The organization was completed about the time the financial depression struck the country as a result of the European war, and the coal business throughout the land was hard hit. The promoters of this company have, however, made theirs one of the most prosperous coal operations in the eastern Kentucky field. The two mines opened have run almost continuously since the day of their opening.



TWO VIEWS AT THE COAL FACE

In view of the encouraging outlook, the company plans the opening of two additional mines and a number of extensions and improvements. A temporary incline and tipple, hurriedly erected in the beginning of operation, is still in use, but this is to be replaced with a modern structure shortly. This tipple will be supplied with a retarding conveyor made by the Jeffrey Manufacturing Co., Columbus, Ohio, of the rope-and-button type, which will be capable of handling about 1,000 tons daily. A 150-ton Fairbanks standard 50-ft. railroad track scales has been recently installed as well as some other much-needed accessories.

In this organization J. Henry Hall was made secretary and treasurer as well as superintendent; in fact, he is the all-round man of the firm. S. L. Bastin is president of the company. He also has some operations in Bell and Laurel Counties, upon which he divides his time, and where he has lived since 1885. Mr. Bastin is an experienced and successful operator. The Elkhorn Coal Co. works a 5-ft. bed of clean coal, especially adapted for gas making, domestic purposes and the manufacture of byproduct coke. The haulage is with mules. The cars are of 36-in. gage and one-ton capacity. They are provided with roller-bearing wheels.

The present capacity of the two mines is from 250 to 300 tons daily, but two more mine openings and the conveyor soon to be installed, together with some additional improvements, will enable the company to mine 1,000 tons per day. Other increases are also to follow as conditions and markets warrant. It is expected that at least 50 more miners' houses are to be built soon.

The mine entries are driven about 14 ft. wide, with approximately an 18-ft. pillar. These entries are turned at right angles at intervals of about 350 ft. The roof is of good solid sandstone and slate and is considered safe. So far there have been no accidents. The company houses are of four and six rooms each. When the construction work is fully completed, a general "clean-up day" will be observed. The miners will be required to clean up their yards and to haul away and remove all trash and refuse from their premises.

The company has a store, or commissary building, in which can be found everything usually kept in stock in such places. Edward L. Williams, of Whitesburg, Ky., was recently employed as clerk. It is the purpose of the company to erect an uptodate Y. M. C. A. building a little later, as well as to furnish other accommodations for its employees. Dr. Owen Pigman, of Craftsville, is the company physician.

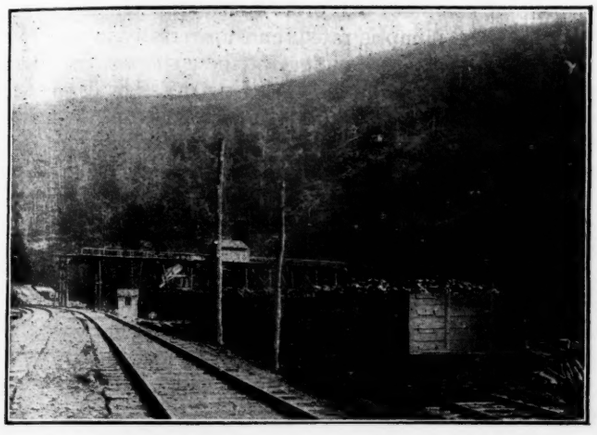
With the continuous increase in output, the Lexington & Eastern Railroad Co. promises additional trackage necessary to facilitate the work as rapidly as possible. The company will need a number of additional improvements from the railroad people, besides possibly a spur line to a new opening to be made soon on an additional boundary.

Immediately surrounding the plant of the Elkhorn Coal Co. there are some historical points of more than passing interest. Less than 200 yd. down the little valley of the stream is the historic beech tree known as the "Boone Tree," upon which Daniel Boone, famous hunter in the early and pioneer history of Kentucky, inscribed his

*Sergent, Ky.

name in rough hieroglyphics, as "D. Boone, 1781." Here for months Boone and his party, it is said, camped and surveyed the mountains to the south, including the adjacent section of southwestern Virginia. Boone, according to history, led his party from the waters of the Big Sandy, across and down Boone's Fork—thus the name. The old historic tree is still well preserved and is an object of interest. It stands immediately above the mouth of Boone's Fork—its confluence with the North Fork of the Kentucky River, along which the Lexington & Eastern R.R. follows the stream from Jackson, Ky., 100 mi. below, in order to reach the wealth of the coal-laden region of the eastern Kentucky mountains, of which much has been written and printed since the development of this hitherto unknown section began only a few years ago.

One mile farther upstream the South East Coal Co. is starting a coal development. The embryo town has been christened Seco. Less than two miles above is Fleming,



VIEW OF THE TEMPORARY TIPPLE

one of the "overnight," or boom, coal-mining towns, where the Elk Horn Mining Corporation holds forth. Practically connected with Fleming is McRoberts, one of the important seats of the Consolidation Coal Co. Within a short time passengers on the Lexington & Eastern may behold a solid town from Kona to McRoberts—eight miles of thriving mining centers, with the black diamonds pouring from the mountain side destined for the coal markets of the world.

The half has never been written of this great coal field. The operation of the Elkhorn Coal Co. is practically in the center of this region. All along the 100 mi. of the extension of the Lexington & Eastern there is mountain after mountain, all underlain with virgin coal beds.

With the continued contemplated increases, the Elkhorn Coal Co. will soon be among the larger shippers and producers of Elkhorn-Boone's Fork coal. At least it has up to the present time succeeded beyond expectations.

I wish to express my sincere thanks for the many kindnesses extended to me by J. Henry Hall, the manager, secretary and superintendent, during my visit to the operation described, to secure the photographs herewith reproduced and the data for the foregoing article.

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A Miner in Easington Colliery, Durham, England, according to the Miner and Quarries report of 1914, was buried in coal to his knees by an outburst of mineral from the face of the heading, which had just passed through three faults. Before he could be recovered he was suffocated by the gas which the outburst released from crevices in the coal.

Water Power Could Not Displace Steam

By Edgar White*

The town of Macon, Mo., is built over a bed of bituminous coal, which ranges from 22 to 26 in. in thickness. Prospect holes sunk all around the town have located the bed, and one colliery is now electrically mining the product. Any man in the city could sink a shaft in his back yard, from 80 to 100 ft. deep and be independent of the coal dealer.

When the Keokuk Power Co. began reaching out for business a subcontracting firm sent representatives to Macon with an offer to furnish the city and private consumers with electrical energy at 3½c. per kw.-hr. Neighboring towns were asked to come in on the proposition.

The section which the water-power company proposed to invade was about 130 mi. from the dam. Coal was, as stated, in the back yards of the people.

C. F. Thudium, superintendent of the municipal power plant at Macon, got out his pencil and did some figuring. He found that with coal-produced power he could undersell his big competitor over on the Mississippi River. With a plant of 400 hp., composed of two engines, direct-connected with generators, and with the pithead of the mine within arm's reach of the power house, he discovered that, based on water-power rates, the coal-produced energy was saving the city $400 a month.

He then went after the outside business in the same way that the hydro-electric people were doing, and closed contracts with the neighboring towns of Bevier and Callao for the transmission of electrical power, and is now figuring with some of the large coal towns in the Bevier district for the same sort of service. After a year's operation as a central power station, the Macon municipal plant has been able to show an annual profit of $5,000 above operating expenses.

Not long ago there was a vote taken to issue $30,000 worth of bonds to extend the water mains, put in a filter and improve the reservoir. The guarantee was given by the administration that the earnings of the power plant would take care of the entire debt, and the proposition carried almost unanimously. Every payment has been met promptly out of the fund designated.

The plant gets coal in the bin at $1.39 a ton and before long may be securing it even cheaper, as plans are now under way to utilize the slack piles or dumps that grew up under the old method of mining coal.

The proximity of a quantity of coal was an important factor in the location of a $400,000 motor factory at Macon. This factory is being equipped with electrically operated machinery. The source of power will be the municipal plant, with a pithead just across the railroad tracks. In proportion to the investment coal has done more for the development of Macon than a water-power dam has done for Keokuk.

The municipal power house at Macon is a small brick building down in a hollow, that would not attract much more attention than a miner's shanty except for two tall stacks. And yet this plant has solved the big question of keeping up municipal improvements and steadily replenishing the treasury of a town of 6,000 inhabitants.

*Macon, Mo.

The Calamity Trail--Mine Pumps

By C. W. Crawford*

SYNOPSIS—Nature has not provided a usable acid-proof metal and man has failed to produce such an alloy. The manufacturer gets the blame for this unfortunate condition as well as for such ills as waterlogged air chambers, cross-threaded glands, improperly lubricated packing, etc. An air cock properly placed will sometimes accomplish wonders.

A lamentable hiatus exists in the general economy of Nature. A new element is needed to supply the wants of certain lines of manufacture—an acid-proof metal combining hardness and cheapness. We have plenty of metals and other materials hard enough for any purpose, but none of sufficient endurance to fight the ferocious acid water sometimes found in coal mines. Pumps can be made mechanically correct and substantial enough to withstand the rigorous duty of pumping mine water, and if only a quality of material could be found to resist the acid a fair degree of perfection might be attained.

Lead is practically acid proof, but no combination of this with other metals can be made sufficiently hard to make it available for pump cylinders and other working parts exposed to the water. No hard metal or union of metals is known that will stand the wear in gritty water and resist the acid effect at the same time. The combination of wear and disintegration soon puts a pump out of service.

The packing of pistons and plungers has much to do with the excessive wear. The kind of packing made of layers of cotton duck and rubber and grit is much in vogue. It is made up square and is very convenient to use. The engineers like it for its easy adaptability and the operators like it for its cheapness. In reality it files the pump cylinder, but doesn't lubricate it—the lubrication is furnished by the gritty water and the acid. Some pumps have a plunger, and a solid brass collar for packing, but this soon wears loose and the pump becomes leaky, and would not be presentable if it were outside where it could be seen. The air chamber of a pump is sometimes eliminated by the engineer or pump man putting an air cock in the top or side, for reasons about equally as wise as those impelling the boiler makers to eliminate the dome from the boiler.

Outside Packed Plungers Are Advantageous

Inside plungers packed with soft packing are not satisfactory because of being incommunicado and subject to neglect. Outside packed plungers would be more commendable than any other kind of construction if the packing were kept automatically saturated with oil. Such a method would, however, involve more expensive construction and operation, and that of itself would be unsatisfactory—and anyway, such a pump could not be lead-lined except at a prohibitive cost; and no one cares to adopt a device that is at once untried, of unknown expedience and of greater cost; for it often happens that our great expectations "gang agley."

*Brazil, Ind.

A telephone call or telegram saying: "That pump we bought from you won't work. Send a man," is startling enough; but when our man finds the piston packed so tight the pump can't move, the joke is on the other fellow. But who pays for the trip? Sometimes such a call reveals that the pump has been working six months with no packing, or that the stuffing-box gland has been screwed up crooked, or the valve-gear has been tampered with and the piston strikes the head, or the pump rod has worn out, or the valve seats are loose, or the cylinder liner is honeycombed and rough, or the pump is eaten up by the acid water. Then the purchaser says it hasn't lasted half as long as the old one, and it never did discharge enough water anyway.

In the installation of a pump it is occasionally convenient to use pipes one or two sizes smaller than those for which the pump is rated, and universally to use short elbows. The water socks against these short stops with a force sufficient to make the pipes jingle, its flow is checked and it has to take a fresh start at each stroke of the pump, traveling 300 ft. a minute or more including the jolts of the elbows. The air chamber becomes waterlogged from natural cause or by choice of the pump man, requiring the discharge column to be started from a dead stop at each pump oscillation.

Relieving Piston Shock

Long elbows can be had as readily as short ones and, better still, bent pipes of any size and any radius can be procured with equal ease. Suction pipes obviously ought to be as free from bends as possible, and a small air cock to keep the air chamber charged full of air should be provided. This air cushion serves to relieve the shock of the piston at the beginning of the stroke and to render the flow of water continuous, at the same time increasing its velocity.

The first instance of such pounding was discovered by Joseph French, at Pittsburgh, before the Civil War. The pumps at the city water-works had for many years been working with a hopeless chronic pound that jarred the earth for the distance of a city block. No one could suggest a cure for it. Engineers East and West gave it up. Finally Mr. French with the assistance of James Hemphill, afterward the head of Mackintosh, Hemphill & Co., solved the problem.

By inserting air check valves in the suction pipe of each pump, enough air was admitted to maintain a full supply in the air chamber under pressure. The relief was instant and the gage indicated an even, steady and uniform pressure, whereas previously it had showed a fluctuation of 70 lb. at each stroke. The pumps, two in number, were 20 in. in diameter with a 12-ft. stroke. The air chamber was of course a large one.

A little instance of that kind occurred some time ago at a mine. My company had sold a pump to discharge the water under a 100-ft. head lift. In a week we had a call saying the pump was behaving badly, better come and see it. I found upon examination that the pump was waterlogged and was pounding horribly. I asked the chief engineer to get me a small air cock for the suction pipe and tools with which to attach it, which he did reluctantly.

thinking all the time what a d—— fool that fellow was. When the job was done, a little air was admitted and the pump went off as quietly as any other pump.

The water in the discharge pipe by its own momentum has a tendency to run ahead of the plunger at the end of the stroke, if not obstructed by too great a pressure. This is as it should be, and when aided by the compressed air in the air chamber its motion is rendered continuous—a condition absolutely necessary for the proper working of all pumps.

Pumps Are Liable To Be Neglected

It is impossible in this space to enumerate all the ills that pumps in mines are heir to, but among the inexcusable ones are neglect and bad usage. The duty of the pump man is more trying and onerous than even that of the hoisting engineer. Groping in the dark—in mud and wet and slush—is conducive to neglect, and encourages inefficient work and criticism of the pump maker.

The wear and tear and upkeep of mine pumps is the most grievous torment the coal operator has to contend with—and the most expensive one—the only relief being to grin and bear. But after all, there's millions in the coal trade when conducted on a liberal scale. Coal lands are usually owned or leased in large contiguous areas and underground workings are much more extensive than formerly. The underground hauling is now done by locomotives at less cost than with tail rope and hauling engines. Mining is done largely by machinery, etc., therefore the output is much increased at less cost all round—and the land exhausted more rapidly. Whole counties are already denuded of coal together with the timber. The last 50 years have been a preparation—a seed time as it were—for big business, and the next 50 will be the harvest.

Then it will be time to consider what the harvest will be, and what the future will be. Americans are improvident—and nobody cares. The future has never done anything for us anyway. Towns are already being depopulated. The coal is worked out and the people are "hiking" for new coal centers. Houses go a-begging and no buyers are found. The land is saved, but it has depreciated in value. Whole counties are worth less now than they were 40 years ago when the coal and timber were intact.

Some of the coal operators and the factories and the railroads have profited. Farmers have sacrificed their land values for a small pittance of immediate cash. The country has been and is now being vandalized and will be poorer than ever when the coal is gone. The large cities and towns are fattening on the improvidence of the country. The country is literally denuded of timber already. Millions of acres of the best timber the world ever saw has been destroyed by the sawmills, and the irony of it all is exemplified in the failure of nearly all those engaged in the traffic. A retribution seems to have followed them. Anyway the timber is gone and there is nothing left worth speaking about to show for it.

No timber is being planted. A farmer would rather cut a tree down than to plant one, and yet timber, where there is any left, is being sent away. Coal also is being exported, but coal is more plentiful than timber, and will last longer. There is an end to it somewhere and then what? The mill will never grind with the water that's gone past.

$10 for Best Suggestion

THE editor of *Coal Age* will pay $10 to that reader of the paper who sends in the best suggestion for the improvement of the paper itself, and $10 to anyone who sends in the best suggestion for the improvement of the general coal industry. All suggestions must be in our hands by Sept. 1. Both awards may be won by the same contributor.

There are undoubtedly many ways in which *Coal Age* can be improved. Perhaps someone can suggest a new department that would be most interesting, or perhaps some of our readers can suggest a departure from our present policy or practice that will benefit mining men. It may be we are omitting efforts along certain lines that should be more carefully investigated. Please remember that the most valuable suggestion for improvement may be an out-and-out criticism of the paper. If we are doing things we should not do, or if we are not doing things we should do, let us hear about it, and perhaps your idea will strike us as the best one submitted.

How often we hear some of our friends tell just what they would do if they were running the coal industry. Here's a chance to collect a $10 bill if you have an idea that strikes us as being really worth while. If there ever was an industry that could well stand a little betterment, it is the coal-mining business. How can prices be improved, mining costs lowered and the mines be made safer places to work in? These and a hundred other things are worth considering. The awards will be based on the practical helpfulness of the contributions and not judged on their literary merit.

Do not wait until next week—send in your suggestions today. Practically the only rule we will tack on to this offer is that each contestant shall make not more than two suggestions, one concerning the paper and one concerning the coal industry. There may be a number of ideas come to us that are worth publishing, although not selected to win either of the $10 offers. Such suggestions will be paid for at an unusually liberal space rate—in no case less than $1 for each suggestion published. All contributions in this contest are to be less than 100 words in length; the shorter the better.

Rocky Mountain Coals in the Pacific Coast Trade

The Rocky Mountain coals are becoming a big factor in the Pacific Coast market. They originate in Utah, Wyoming, Colorado and New Mexico.

Colorado Coal—The coal from Colorado is an anthracite and comes into competition with the Pennsylvania anthracite. It sells in this market at $13 wholesale and carries a $7.50 freight rate.

Utah Coal—The coals imported to this market from Utah are known to the trade as King, Hiawatha, Blackhawk, Aberdeen, Standard, Castlegate, etc. The principal ones are King and Castlegate, Some of the others are sold under either of these two names, according to whether they come from the east or the west side of the mountains.

King coal is the most extensively advertised. It had a hard stand at first against the known water coals, but gained in popularity especially during the Nanaimo strike, when no Wellington coal came into the market. It is well liked by retailers and consumers, as it has very little screenings—less than 2 per cent. when coming in cars—and makes only a small amount of ash and soot. The King coal is sold at $7.50 screened f.o.b. wholesaler's yard; it carries a $5.15 freight rate and where bought in carloads, sells from $2 to $2.50 f.o.b. car at mine, according to the season. King coal, like other rail coals, arrived in the market rather spasmodically in former years in the winter time, but the railways are making every effort to get the coal-carrying business and shipments are now more regular. Castlegate is a slightly better fuel than King coal and sells at $8 at the wholesale yard. Like other Utah coals, it has a $5.15 freight rate to contend with. It is sold in San Francisco by the California Coal Co., a subsidiary of the Western Fuel Co. Wyoming Coal—The coal from Wyoming is semibituminous and is known to the trade as Rock Springs and Rocky Mountain coal. Rock Springs is not sold very much in San Francisco. Quite a big trade, however, is done with it in Oakland, a trade especially fostered by James P. Taylor of that city. This coal also has a $5.15 freight rate. It is cleaner burning than the bituminous coals and wholesales at $8.

New Mexico Coal—The coal imported from New Mexico is a high-grade lignite having about 12,500 B.t.u. heat value and is known as American block or American cannel coal. It comes from Gallup. The coal has been selling in this market for the last 20 years. It was at first sold through agents, but the mines now have a direct selling agency that has brought the coal very much in the public eye during the last 10 years. Although it has not the heating value of the other grades selling at the same price, it is very popular owing to its clean-burning qualities and convenient size.

It carries a $5.15 freight rate and, being a lignite coal, has about 5 per cent. screenings. It is wholesaled at $9 in ton lots in San Francisco and at $8 in carloads in Oakland. Its screenings bring about $3 and are hard to dispose of. The sales company admits that if there were a bigger sale for the coal, they might find it impossible to dispose of all the screenings.

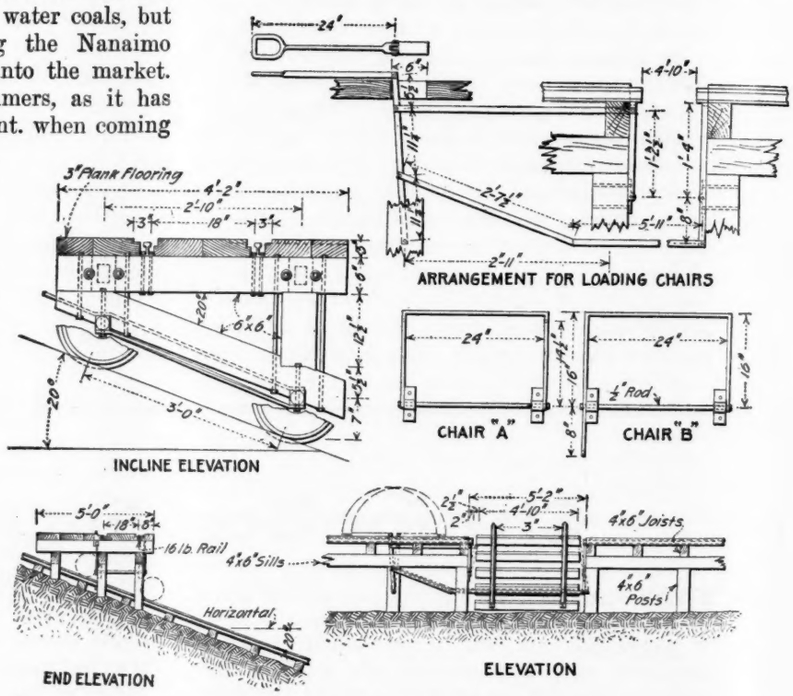
Pacific Coast Mining Institute

Further letters favorable to the organization of a coal-mining institute in Washington State will be published next week. The movement appears to be unanimous.

Transfer Truck and Chairs

By Roy F. Smith

The accompanying sketches show a transfer truck and landing chairs that were recently designed for use on an inclined cable tramway, operating on a 20-deg. slope.



THE TRANSFER TRUCK AND CHAIRS

This truck has a 30-in. gage and a 36-in. wheelbase. It is built to accommodate either mine cars or trucks having 18-in. gage and either 18- or 24-in. wheelbases. It will also be used to hoist machinery and structural material during the period of construction. The frame of the truck is constructed of 4x6-in. and 6x6-in. timbers on which is laid 3-in. plank flooring and the mine-car rails. In order to sprag the mine cars on the transfer truck, ¾x¾x20-in. long slots are cut in the flooring in which to lay two pieces of bar iron. The weight of the truck is 800 lb.

Landing chairs of the type shown can be easily made from ordinary stock by the mine blacksmith. The link connecting the chairs on opposite sides of the incline passes beneath the track.

While this was designed for this particular job it can be used in underground work and permits hoisting in an incline without transferring loads to monitors.—*Engineering and Mining Journal.*

The Labor Situation

General Labor Review

In the anthracite region the mine workers, after months of reasoning with those who would not join the union and despite months of counsel from their labor leaders, declared a number of "button" strikes in conflict with the recent agreement they made with the operators. All these strikes are either successful or likely to be successful soon.

Judge Buffington on the circuit court has appointed Charles P. Neill as umpire for the Anthracite Arbitration Commission. Mr. Neill has served in this position before.

In the western Pennsylvania region the miners have succeeded in consolidating five of the corporations into an association, and have completed a contract with the body so formed which includes the Ford Collieries Co. at Russelton. Agreements have been made before with most, if not all, of the companies.

The new contract is uniform for all companies and provides that $14,000 of fines for strikes in violation of contracts shall be remitted. The fine is now fixed at $1 instead of $2 for every day any union mine worker is idle. The miners hope to induce the formation of two other associations and to close contracts with them. The body just formed is the Freeport Thick Vein Coal Association.

In western Kentucky the operators are trying to start their mines, but progress is slow. In Indiana and Wyoming important strikes appear to be impending.

In the Southwest the details of the contract made by the miners and operators are now being settled subject to the broad outline already signed up. Alexander Howat, for the miners, proposes that all disputes be settled by having the grievances referred from the pit committee to the president of each local district and finally to the commissioner if local officials cannot settle the trouble.

The miners also appear to wish to prevent men being discharged for cause. They desire to insert in place of the clause recognizing that power on the part of the operator a statement that any man who applies for employment, claiming he was discharged unjustly, must be given work at the end of five days and must be kept at work till his case is adjudicated.

The operators are wondering if they are properly protected in the adoption by both parties of the No. 6 clause of the New York agreement, for the supplemental agreement signed by William Diamond for the miners and F. W. Lukins for the operators states that all the clauses are to be considered in order "until the entire contract has been considered and disposed of either by reaching an agreement or otherwise." Surely, however, this does not permit proposals to modify any part of the old contract in a manner which will invalidate the clear provisions of the new contract.

Anthracite Button Strikes

The relative contentment of the miners in the anthracite region was broken last week by a number of button strikes. The button strike is an offense against the contract and an interference with personal liberty. It cannot be in any way defended and least of all just now. The union men have been declaring that the union has betrayed its trust and has misled its followers, and yet these same men are for driving out all those who will not contribute to its funds.

It is as if a man declared with one breath that the Republican party, for instance, had violated its pledges, and with the next breath declared that anyone who would not contribute to its finances should be deprived of the right to earn a living.

At the Powderly mine of the Delaware & Hudson Co., 700 men struck on July 31 and did not return to work till Aug. 5 because three men did not have buttons. The Coalbrook mine workers, 1,400 in number, also struck because some of the miners were not union men in good standing. On Aug. 5, 560 men from No. 1 mine went on strike because seven men were without buttons. All these men have now returned to work after having successfully induced the men in arrears to pay up their dues.

The Philadelphia & Reading Coal and Iron Co.'s North Franklin mine was completely closed on Aug. 1 because some workmen refused to pay their union obligations. At Eagle Hill and Silver Creek collieries of the same company, about 2,000 men went on strike. At the Silver Creek mine where 1,200 men work, 22 had failed to pay their dues for the new quarter. At Eagle Hill out of 900 men, 8 reported without buttons.

The men are discontented in any event, because the company is demanding that they work till 3:35 p.m. The men at Thomaston colliery have quit on this account, claiming that the company cannot compel them to work after 3:30 under a rule adopted after the 1902 strike.

There has been a button strike at the Beaver Meadow colliery of the Lehigh Valley Coal Co., in the progress of which it is charged Wassil Barnes, a union worker, clubbed Petphen Stefanko who was behind in his dues.

How Workers View Ethics of Button Strikes

There has been a big button strike in the collieries of the southern division of the Delaware, Lackawanna & Western R.R. Co. It is interesting to quote what W. A. B. has to say about it. He evidently views it in the following light: The rights we have, have been secured by the union. We unionists have had to finance every recognized strike which has been conducted to secure those rights, and we have had to pay organization expenses. We don't believe in petty strikes, but we are not going to let other workmen profit by our expenditures and sacrifices unless they will pay down dollar for dollar with ourselves.

W. A. B. says in his letter:

In order that there may be no misunderstanding as to the reason for the 5,000 or more employees at the Truesdale, Bliss, Auchincloss and New Loomis collieries going on strike, I write to inform you that the men who have paid their dues in the local unions for the last six months and longer have done everything in their power to avoid this button strike, realizing as they did what useless and foolish things petty strikes are.

The committees appointed by the various local unions used all honorable means during the last five months to get these delinquents to do their duty by their fellows. But it was of no avail. It was put up to the men who would not pay union dues that if the men had to stop work on their account the man who did not pay his dues would lose in one day's idleness more than would pay his dues for five months.

But these men would refuse with an oath to pay their dues. So after long trying the union men took the bit in their teeth and their national and district officers could restrain them no longer. I hope and trust that by the time you receive this the men will be back at work and that we will have industrial harmony for the next four years. Most of the men at the present writing (Aug. 7) have paid up, and unless the company feels disposed to retaliate the men will be working Tuesday.

I notice an unfortunate tendency on both sides of the controversy. The employer and employee are like two tomcats. So long as their fur is rubbed the right way they hump up their backs and purr most peacefully. But let the fur once be rubbed the wrong way and the fire flies, and the devil is to pay in general.

Evidently the writer of the letter believes that the right to strike against nonunion men is inherent and not to be denied except in so far as it is prohibited in the terms of an agreement; even then, he thinks there are exceptions justifying a strike. But an element of reasonableness shows itself from start to finish of the letter, and the difference between the two parties—the operating concern and the employees—is one of ethics and not of facts. Is it right to compel a man to join the union by refusing to work with him? Are there occasions in which it is permissible to strike against the express terms of a contract? The mine workers appear to have answered both questions in the affirmative. The public cannot agree with them.

Plight of Kentucky Strikers

For several days the operators of mines in western Kentucky, District No. 23 of the United Mine Workers, have been proceeding on a new policy, looking toward resumption of work. Each evening the whistles at the mine power houses blow the signal that work will begin at the usual hour the following morning. Each morning a similar signal is given. Just how the plan is succeeding is not clear. The statements of the opposing sides do not by any means agree. The operators insist that more men are reporting for work every day and on the other hand the local union officials insist that they are holding out.

The operators appear to have by far the best of the argument and they are presenting the case to the workers in the

words of the international organization, which has urged the strikers to accept the terms offered by the operators, declining at the same time to support the strike. This places the officials and obdurate mine workers of the district in the light of rebels. The position of the international board was set forth in a recent letter to the strikers which in part is as follows:

We want it definitely understood that we are unable to support a strike in your district. The international organization urges you to accept the tentative wage agreement which has been submitted as the ultimatum of the operators. We are of the opinion that if you continue to act in violation of this advice, which is based upon careful consideration of every phase of the situation, that you will destroy our union in Kentucky, and promote the policy of the open shop.

It is our view that it is better to preserve the union we have in Kentucky, which is practically the only real district organization we have in the South, than to continue a policy which will finally lead to ruin and destruction. Moreover it is our belief that if a strike is waged in Kentucky, it should be in the nonunion fields which are directly responsible for the deplorable condition of affairs in your district.

The letter, as published, bears the signatures of Frank J. Hayes, acting president, and William Green, secretary-treasurer. It was written before the recent second referendum on the proposal to accept the offer of the operators. Balloting on this referendum, however, showed the miners unwilling to accept the advice. There have been many stories alleging that the strikers and their families are suffering and even starving as a result of the suspension of work. Some of these stories are quite circumstantial, but they are being vigorously denied.

It is reported that miners working to keep the mine properties in shape are assessed 25 per cent. of their earnings for the aid of the strikers. For the operators it is stated that hundreds of the men listed as strikers have left these mines, obtaining work elsewhere, and that this is one of the principal reasons why the response to the call of the operators is not so large as it might be. Statements from the operators are to the effect that they confidently expect the strike to be broken.

New Coal Rate to Kansas City

At the meeting of the Federal Trade Commission at Kansas City on July 26 it was evident that the contract taken by Springfield, Ill., operators to supply screenings from that district to the Metropolitan Street Railway Co. at Kansas City, at the rate of 1,500 tons daily, had aroused considerable apprehension on the part of Kansas and Missouri operators.

At this meeting the attention of Commissioner Hurley was called to the fact that the Chicago & Alton Ry. had made an unusually low rate to Kansas City on this business, which absorbed tonnage that legitimately belonged to the Kansas and Missouri field, the statement being made that marketing Springfield screenings in Kansas City was like "carrying coals to Newcastle." The commission was asked by mine operators present what remedy local operators had to prevent this serious injury to the Kansas and Missouri industry, and the commissioner told them that he would be glad to have their complaints in writing, although he could not definitely promise them any relief.

The Springfield operators have secured another contract of some magnitude at Moberly, Mo., on a low rate made by the Wabash R.R., which tonnage has heretofore been supplied by Missouri operators and which has increased the tension. The Kansas and Missouri operators are very much worried over this competition, and are leaving nothing undone to overcome it.

New Way of Giving Rebates

The Government has begun proceedings in the Federal Court at Chicago against the Monon Railway Co. which may have an adverse effect upon the mining industry of Sullivan and adjoining counties in Indiana.

The railway company is charged with practicing an ingenious form of rebating, and injunction proceedings have been instituted with the view of arriving at the true facts of the situation.

The defendants named in the complaint are the Monon Coal Co., Vigo Mining Co., Indiana Coke and Gas Co., the Bankers' Trust Co., of New York, William Morris Imbrie, James Imbrie and Alfred M. Ogle, Indianapolis, coal-mine operators. The Bankers' Trust Co. is named as trustee of the first gold mortgage bonds of the Monon and Vigo coal companies.

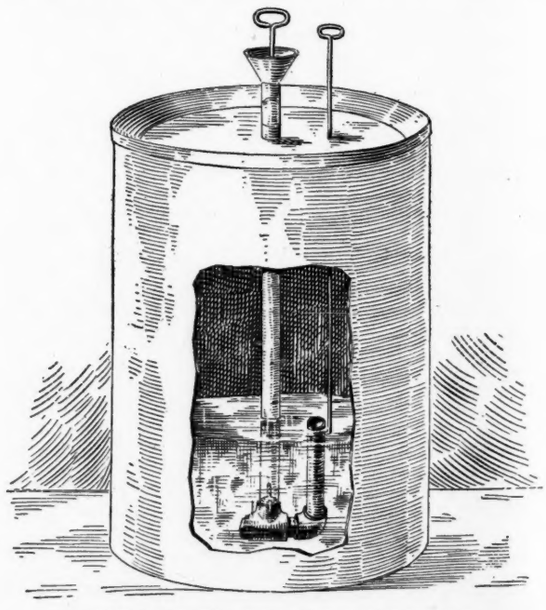
In 1911 the Monon Coal Co. was organized as a holding company, taking over operating mines in Sullivan, Clay, Greene and Vigo Counties. It is said to have paid for the property taken over with $750,000 of its capital stock of $1,000,000, and to have given a lien on its $2,500,000 twenty-five year 5 per cent. gold bonds. The Monon R.R. is alleged to have paid the interest on the bonds since 1911, aggregating $500,000, and this act is stated to have constituted rebating.

It is further charged that by way of reciprocation the Monon Coal Co. has been diverting the lion's share of its shipping tonnage and longer hauls to the Monon Railway Co. to the exclusion of other competing railways. The Government feels that this situation may constitute grievous infraction of the Federal statutes which interdict all forms of rebate. The injunction asks that the arrangement be terminated.

There is some fear that this litigation may work harm to local Indiana mining interests because of the peculiar conditions already prevailing in the coal business in southern Indiana. A difference of a few cents per ton in freight rates to Chicago and other important sales points in the north between the extreme southern Indiana mines and those a few miles farther north in the Clinton-Terre Haute district has been sufficient to force suspension of many mines. There is fear that perhaps the present profitable operation of many mines in Sullivan County may perhaps be due to this peculiar and ingenious arrangement between the Monon Coal Co. and the Monon Railway Co., of which the Federal Government is now complaining.

Low Oil Level Indicator

It frequently takes some time to put requisitions through our purchasing office and have the goods delivered, and we are often inconvenienced because the men in charge failed to notice that the supply of oil in the storage tanks was getting low before the tank was actually empty, says M. Saller in *Power*.



HIGH-LEVEL PUMP SUCTION PIPE

To overcome this we attached loosely to the suction of the oil pumps in each tank a pipe, as shown in the illustration, turning vertically about 14 in.

After the tank has been filled, the end of the suction pipe is turned upward so that, instead of taking oil from the bottom, it is drawn from a higher level. When the oil reaches this level, the suction is lost and the attendants are warned that it is time to requisition more oil. To take care of requirements in the interval, it is only necessary to turn down the vertical pipe so that it will draw the oil from the lowest level in the tank.

Editorials

Importance of First-Aid Meets

It would be invidious to select one particular first-aid meet and say it is the most important of the many held in any given year. However, the claim is made sometimes of the superiority of some particular meet, and then it becomes a question whether the declaration should be permitted.

It may therefore be permissible here to call attention to some of the large meets held last year, and if the events selected do not deserve the consideration shown them we shall be glad to record the names and details of those that were larger and more important.

As our records go, the Alabama Safety Association on May 29 and the Philadelphia & Reading Coal and Iron Co. on Sept. 18, 1915, held the two largest meets, both having 74 competing teams. The Association had hoped to have 79, but 5 failed to appear. This year the meet of May 27 was smaller than that of 1915, only 44 teams competing.

The Alabama meet was an intercompany event, while that of the Reading was confined solely to the men working for one corporation. The numbers at the annual Reading contests, except at the dinner that takes place in the middle of the meet, do not impress one as forcibly as they might, for at no time do all the teams work together. The morning demonstration is a series of elimination events and in the afternoon the final contest completes the day's work. So neither in the morning nor in the evening are there many teams at work at one time.

Of all the meets in the anthracite region that which makes the most impression on the spectators is that held yearly by the Susquehanna Coal Co. On Sept. 25 the Susquehanna and Lytle Coal companies had 52 teams on the ground all working at one time, and so arranged that the spectators could get a good view of the proceedings.

The Ellsworth meet is perhaps the largest private meet held in the bituminous regions. As many as 45 teams demonstrated their ability to care for the injured at the contest of Sept. 25 last year.

Some will say that mere numbers are not the right gage by which to measure a meet, but rather representative character; and they will point out that the post-elimination, intercompany or interstate contest is far more important than one that involves teams drawn from nearby collieries without the exclusion of the less fit. It may be said, however, that the men at the Reading and Susquehanna meets are all of them trained to a state of excellence that it would be hard for the contestants at an interstate meet to beat.

At the First National Mine Safety Demonstration on Oct. 31, 1911, there were 40 teams competing. The Panama-Pacific contest in September, 1915, had 26 teams entered. Both these meets were open to coal and metal mine workers.

The meet at Cresson, Penn., which is described in this issue, was apparently only in part a post-elimination contest. It was a local, but still an intercompany meet generously representative of the mines of the district. In numbers it came near to the First National Safety Demonstration, for there were 39 teams entered; and probably it is permissible to regard it as the largest local, intercompany, post-elimination contest in western Pennsylvania and maybe in the United States, for the demonstration arranged in 1911 in Pittsburgh was not local. The meet of the Alabama Safety Association at Birmingham, Ala., was not a post-elimination contest and the Reading, Susquehanna and Ellsworth meets are not of an intercompany character.

Problem of Labor Shortage

The problem of labor shortage may be met possibly by advertising for men. We do not mean by putting an inch or even a quarter-page advertisement in some local paper, but in a more direct, personal and effective manner.

This is the season when the mine gardens are at their best and the homes of the miners are most inviting. Instead of giving prizes to those who have produced the best gardens, at least one corporation—the Susquehanna Coal Co.—is having the home photographed. These prints are given to the tenants as mementoes of the excellent work done and are used by them to adorn the walls of their homes.

Why not go a little further and make picture postcards of these gardens and give them to the successful to send to their friends? The argument would be quite obvious, even if not written in words: "We are doing well and prospering. This is a good place to work. Come and join us."

West Virginia, which has a number of pretty and healthful towns in which any one would desire to live, and which has a continual labor shortage apparently everywhere except in the Cabin Creek district, might well by some such plan induce labor to come even from the old country.

A few weeks ago a Hungarian miner dressed a big pig and went to the photographer with this substantial proof of his affluence and had himself photographed for the benefit of his unfortunate friends in the Magyar kingdom who possibly were feeling the food scarcity resulting from the war and who doubtless had never owned a whole pig even in pre-bellum days.

One cannot advocate perhaps so gross a piece of advertising as the peasant's mind here conceived, but still no one could fail to feel impressed should he receive from a long-absent friend a picture showing the peace, prosperity and comfort that had become the wanderer's happy lot.

The United States Coal and Coke Co. is having moving pictures taken of the judging of its garden contest. This is a good idea, as it will clearly exhibit the happy conditions under which its workmen live, but the picture postcard seems a still better way of keeping before strangers the knowledge that ours is the village beautiful and that they have friends in our town who would make it still more attractive as a place in which to work and reside.

Deciding Industrial Factors

Much of the success of industry depends upon moral factors that are quite easy to overlook. If we are going to have strikes about anything or nothing just simply because our men are exasperated or suspicious or are led by unscrupulous agitators, we are going to throw away a large amount of our industrial efficiency. After all, the biggest American asset in the past has been the wonderful coördination of freedom of action with unity of effort. Every man did his best not because he was urged, but because he had the habit of industry and because he had the disposition to do his part in the effort.

Union agitation has destroyed to a large extent this happy condition. We presume no union man will deny that there is something valuable in the coördination of effort thus partly destroyed. Production is the outcome of the smooth working of two gears, capital and labor. When they work in harmony the greatest output is secured. Perfect unity of action is necessary for success.

The union man while doubtless admitting this feels that there is something more important than harmony. He realizes that the workman should have a fair deal from capital and he believes that the union helps him to secure it. Whether the union aids materially to enable the body of workingmen to get a better living is, indeed, a matter for controversy.

It is not well, however, in the limits of an editorial to enter into the question of the benefit of the union to the workingman, but rather to insist that the relation of harmony is more productive during industrial operation than strife and that even the days of production are increased when harmony is secured.

Consequently the creation of unity of purpose should be constantly kept in consideration by both operator and miner. Fairness and diplomacy should always be shown. The viewpoint of the mine worker should be kept constantly in mind and an abiding faith in the amenableness to reason of both parties should animate discussion.

There is no reason for half of the present bitterness if only coolness and mutual respect were maintained in controversy, and if every care were taken to promote the right feeling when no controversy was on hand.

Somehow we must retain that fellow feeling in industry or the product of our country will decline and the workman suffer. Somehow correct principles of economy which neither the workmen nor their bosses fully understand must be spread broadcast. Somehow thrift must be taught not only to the workman but to the mine owner also.

The mind and character of the employee will ultimately determine the product of industry. Factious agitation in Europe has crippled the effort of the worker till it is wonderful that anything is done. Everything has to be paid for that the worker does. If capital took a like extreme method and complained that every specific act was not compensated then when we went to the station to take a train we would pay for the privilege of entering the station, pay the ticket seller for his work of delivering the ticket, pay again for the seat in the car, pay for the movement of the train to the station, pay for the privilege of using the outgoing station and a hundred other items equally trivial.

Much of the present agitation is for the payment of the worker for every operation subsidiary, or consequent, to the main act. If we pay for mining per ton, we must pay further for all the timbering and slate handling consequent on that work, and for the laying of the road and placing of the cars at the face. Of course this is sometimes justifiable, but the progress of agitation frequently lands us up against a hard condition where it is nearly as much labor to keep the books as it is to do the work. A few concomitant jobs usually go with the main task and unless unusually burdensome they should be regarded as necessary work.

Another trouble that has arisen in Europe has been the excessive division of labor which the unions have zealously worked to create and which makes it necessary to get a half dozen men to do one small job. It is not such a general trouble in America, certainly not in the mines, and we do well to steer away from it.

Cool commonsense will keep us free from many labor follies and enable us to keep up a large production without which it is not possible that labor and capital will have much to divide. Bitterness and exasperation will end in making contracts interminably minute and so long and harassing that their terms for lack of careful consideration will be self-contradictory.

In some places already lawyers are being employed to negotiate, interpret and misinterpret labor contracts. It has been said that the people are the happiest who have and need the least lawmaking. So also those workmen are the happiest who have and need to have only the simplest of mine contracts.

Coal-Mine Power Plants

Several weeks ago we called the attention of *Coal Age* readers to a proposed plan of devoting greater editorial attention to information relative to coal-mine power plants, also the distribution and application of power in and about mines. A number of articles have come to us from various contributors dealing with this subject—power. We want ten contributors, however, for every one who has already written for us. Practically every mine has its power plant; in fact, there is no subject relating to mining that is of greater interest or that is more vital to successful operation.

In almost all instances coal-mine foremen, superintendents and managers must have a good working knowledge of power problems if they are to stand high in the mining game. If each mine official who reads *Coal Age* will get busy right away and tell his brother officers in other companies and in other fields just what he is doing, they in turn will reciprocate and before many weeks have gone by *Coal Age* will be the medium for the exchange of ideas and information on power subjects that will result in much benefit to the coal industry individually and collectively.

If you have a good plant, write it up, accompanying the descriptive matter with photos and whatever drawings are available. Perhaps you have inaugurated some new scheme for power distribution, or maybe some of your employees have devised and applied a new wrinkle that is operating with great success. All these things are worth while and will be appreciated by the industry. We'll do our part and try to make it worth your while in a material way for the time spent in preparing such articles. Don't wait until tomorrow; that's a bad habit and one good way of not doing it at all. Get busy today.

Department of Human Interest

First-Aid Meet, Cresson, Penn.

SPECIAL CORRESPONDENCE

SYNOPSIS—Perhaps the largest local intercompany post-elimination contest ever held in western Pennsylvania. There were 39 teams in attendance, sent by 18 different companies and having their headquarters in some 21 towns in that part of the state.

The first-aid meet at Cresson, Penn., held Saturday, July 22, was for the most part a post-elimination contest. The participants represented a thousand mine workers or more who had practiced first aid. A dozen elimination contests were held by the companies to exclude all but their best teams.

There have been meets larger than this, but it is thought none which were both local and preceded by a careful elimination of the less skilled. There were 39 teams comprising 234 miners in the lineup, and they came from 18 different companies and had their headquarters in 21 separate towns.

PHYSICIAN APPORTIONED TO EACH TWO TEAMS

The 20 judges were all physicians chosen by the American Red Cross under Frank U. Ferguson, of Gallitzin, judge-in-chief. The judges were as follows: Doctors George W. McCafferty, Somerset; Henry H. Brotherlin, Samuel C. Smith, Hollidaysburg; George E. Alleman, Altoona; Arthur S. Brumbaugh, Altoona; Clare W. Bucket, Altoona; John Hughes Galbraith, Altoona; George Hay, Johnstown; Walter C. Raymond, Lilly; George I. Yearick, Lilly; Robert J. Sagerson, Johnstown; F. Albert Donlan, South Fork; John J. Singer, Greensburg; B. F. Coe, Clymer; B. F. Bowers, St. Benedict; W. B. Diefenderfer, Altoona; G. A. Ricketts, G. E. Simpson, Indiana; R. J. Turk, J. M. Cornely, Madera.

The fieldmen were representatives of the United States Bureau of Mines, the State Department of Mines, the State Department of Labor and Industry and the Associated Companies. The United States Bureau of Mines had assisted quite largely in the instruction of the men.

The meet was one of the intercompany meets so successfully held by the State Young Men's Christian Association of Pennsylvania as a part of its industrial program. Its educational secretary, George B. Landis, was manager of the meet.

The operators are showing constantly a greater interest in the safety of their men—and be it said of their mules also—as the reflected influence of the "safety-first" movement, past contests in first-aid and the pecuniary advantages afforded by the compensation law to those companies having first-aid teams. This fact contributed largely to the success of the event.

ONLY TWENTY TEAMS CONTESTED AT ONE TIME

In spite of the lowering weather a large crowd attended the meet. The Pennsylvania Railroad Athletic Park was given for the occasion. A space 75 ft. wide by 250 ft. long was fenced off and was large enough so that 20 teams could work at once, the odd numbers competing at one time and the even numbers at another.

At 10 a.m. the one-man event was begun. It was followed by two-man and team events. After an interval for dinner the contest was continued without interruption till 6 p.m. So close was the competence of some of the teams that as many as six ties were run off to decide one event, and the doctors say that if the teams become more proficient it will be necessary to arrange harder problems or to adopt a more exacting system of marking the defects of competing teams.

TROUT RUN COAL MINING CO., OF PORTAGE, WITH PERFECT SCORE, STOOD FIRST IN FULL-TEAM EVENTS
Left to right—G. W. Grove, instructor; Edward Bruening, captain; Edward Graton, John Richardson, Clyde Gourley, John Shaffer, Charles Hodgett, patient; A. C. Hohnke, superintendent

PENNSYLVANIA COAL AND COKE CORPORATION'S PATTON TEAM WAS SECOND IN THE FULL-TEAM EVENTS
Right to Left—Elmer La Porte, foreman; Louis Christoff, captain; James Brown, Andrew Homits, Robert Matley, Walter Beckwith, Forest Matley, patient; Robert Newcomb, instructor

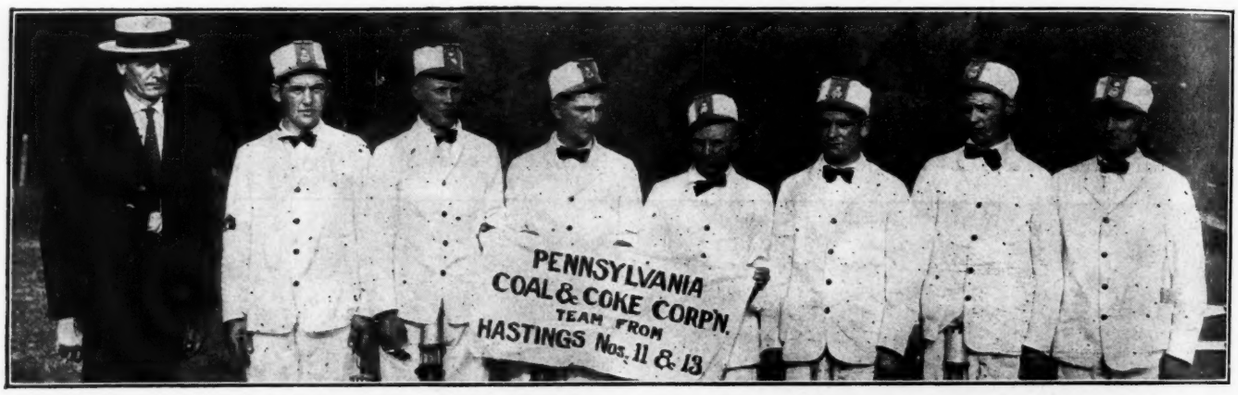
H. M. Wilson of the Associated Companies made a few remarks in presenting the medals of the National Safety Council. American Red Cross medals and certificates were also awarded.

E. C. Brown, for T. H. Watkins, president of the Pennsylvania Coal and Coke Corporation, presented six pairs of gold cuff buttons to the company team making the highest mark and the same gift to the highest team of any other company. Prizes were numerous and valuable. An elegant fob was given to each contestant.

The winners are as follows: The one-man event was won by Henri Yvonnet, of the French team of the Rich Hill Coal Mining Co., Hastings. Harry E. Davis and William McHenry, of the Pennsylvania Coal and Coke Corporation, Hastings, took first place in the two-man event. Thomas Buggy and William Mathias, of Madeira-Hill Coal Co., were second; and Joseph Paddock and Andrew Hrico, of the Pennsylvania Coal and Coke Corporation, Patton, third.

ORDER OF PRECEDENCE AND RATING OF TEAMS

The average percentage of the teams and their standing after all ties were worked off were: (1) Trout Run Coal Mining Co., 100; (2) Pennsylvania Coal and Coke Corporation, Patton, 99⅜; (3) Pennsylvania Coal and Coke Corporation, Hastings, 99¼; (4) Nant-Y-Glo Coal Mining Co., 99¼; (5) Madeira-Hill Coal Co., 99; (6) Pennsylvania Coal and Coke Corporation, Ehrenfeld, 99; (7) Clearfield Bituminous Juniors, 98⅜; (8) Portage Coal Mining Co., 98⅜; (9) Rich Hill Coal Mining Co., 98¼; (10) Sterling Coal Mining Co., 98¼; (11) Pennsylvania Coal and Coke Corporation, Nanty-Glo, 98¼; (12) Watkins Coal Co., 98¼; (13) Pennsylvania Coal and Coke Corporation, Patton, 98¼; (14) Pennsylvania Coal and Coke Corporation, Patton, 97⅜; (15) Pennsylvania Coal and Coke Corporation, Gallitzin, 97⅜; (16) Binder Coal Mining Co., 97⅜ (17) Pennsylvania Coal and Coke Corporation, Moss Creek, 97⅜; (18) Rich Hill Coal Co., 97⅜; (19) Maryland Coal Co., 97⅜; (20) Empire Coal Co., 97¼; (21) Pennsylvania Coal and Coke Corporation, Amsbry, 97⅛; (22) Pennsylvania Coal and Coke Corporation, Beaverdale, 97; (23) Pennsylvania Coal and Coke Corporation, St. Boniface, 97; (24) Watkins Coal Co., 97; (25) Rich Hill Coal Co., 96⅜; (26) Barnes-Tucker Coal Co., 96⅜; (27) Clearfield Bituminous Coal Co., 96¼; (28) Shoemaker Coal Mining Co., 96¼; (29) Pennsylvania Coal and Coke Corporation, Cresson, 96¼; (30) Pennsylvania Coal and Coke Corporation, Ehrenfeld, 95⅜; (31) Rich Hill Coal Co., 95¼; (32) Stineman Coal Co., 95¼; (33) Vinton Colliery Co., 95¼; (34) Pennsylvania Coal and Coke Corporation, Cresson, 94; (35) Sterling Coal Co., 94; (36) Rich Hill Coal Co., 94; (37) Cherry Tree Coal Mining Co., 93; (38) Rich Hill Coal Co., 92⅜; (39) Eastern Bituminous Coal Co., 90⅜.



THIRD BEST TEAM IN FULL-TEAM EVENTS WAS THAT OF PENNSYLVANIA COAL AND COKE CORPORATION, HASTINGS
Left to Right—J. R. Nicholson, district superintendent; Harry Davis, captain; William McKendrick, William Stewart, Stephen Fetsko, patient; Percy Achen, Spear Davis and Joe Waxmunski

MAIN AND TIE PROBLEMS USED IN THE CONTEST

The problems given were: For the one-man event—Man has been overcome by gas. The roof is too low to admit of carrying him while standing erect. Carry him 20 ft. to a place where you can assume an erect position, then for 20 ft. by the "shoulder carry." Perform artificial respiration for one minute by the Schaefer method.

For the two-man event—Patient has severe steam burns on face, neck, ears and both hands. Treat and carry him 20 ft., without a stretcher.

The two-man ties were as follows: Patient has simple fracture of right forearm and scalp wound on back of head. No bleeding. Treat and carry him 20 ft. without using a litter.

A car has run over a patient's left foot, cutting it off in front of the ankle joint. There is severe bleeding. Treat and carry him 30 ft. on a two-hand seat.

Patient has a compound fracture of the left leg below the knee, involving both bones. Prepare him for transportation.

Patient is found unconscious, lying with his abdomen on an electric wire. His right forearm is found to have a simple fracture. Rescue and treat the case. Artificial respiration should be performed for 2 min.

The three full-team events were: Patient has a compound fracture of left thigh, a wound 3 in. long in the calf of the right leg, and a cut on the outer surface of the right forearm which is accompanied by profuse bleeding. Treat and carry him on an improvised stretcher 25 yd.

Patient has a broken back and a simple fracture of the right forearm. Prepare for transportation.

Patient has right hand cut off, a simple fracture of the left thigh, a laceration of the scalp. Treat and carry on blanket stretcher.

The team ties were as follows: Man is found unconscious with his back across a live electric wire. Rescue him and give him artificial respiration for one minute. Then treat burns on the back and right upper arm. Carry 30 ft. on some other form of improvised stretcher than that made of poles and coats.

A man overcome by afterdamp has burns on his hands, arms, neck and face. Carry him 10 ft. on an improvised litter. Two of team at that time should be supposedly overcome by gas. The remainder of team will then without a litter carry the patient for 20 ft. to fresh air and will treat the case.

Man found under a fall of coal with punctured wound of abdomen, a broken rib on the left side and a cut on right side of the face which is bleeding in spurts. Treat the case, three men then carrying the patient for 20 ft. where the passage is too narrow to permit the use of a stretcher.

As a result of a fall a man has simple fracture of the left collar bone, also a simple fracture of the right thigh. Prepare the patient for transportation and carry on a stretcher 20 ft.

The next intercompany meet under the auspices of the State Young Men's Christian Association will be open to Somerset County teams only and will be held at Boswell, Penn., on the entire day of Saturday, Sept. 2. The committee has already received 26 entries. The list will remain open for further entries until Aug. 20.

This work has educational value for all engaged; it proves an incentive to the practice of "safety always"; it sometimes enables a man to care for his own hurts; and it may afford him an opportunity to save the limb or life of some unfortunate.

Inspectors Need Rescue Chiefs

By R. Z. Virgin*

"Safety First," "Preparedness" and "First Aid" present themselves more forcibly now than any other issues in connection with modern business enterprises. Our common duty as man to man, whether employer or em-

*Superintendent of coal mines, Wheeling Steel and Iron Co., Wheeling, W. Va.

ployee, requires us to keep these issues constantly before us, so in our daily lives we preach these principles, but judging from observation, we do not always practice them. In fact, in what follows we appear to violate them all.

I have in mind a coal mine situated within the corporate limits of a large city. It is in a section known and reported as being in nongaseous territory. Safety lamps, first-aid crews, helmets, oxygen apparatus, etc., are almost an unknown quantity. After the mine workers begin their task in the morning, a gas explosion takes place. The superintendent, mine foreman, firebosses, shotfirers and all the officials are in the mine, and everything points to a deplorable condition.

The news has reached the next mining camp, which may be from 2 to 10 mi. distant, and immediately the official in charge sends for his foremen, firebosses and first-aid crew, and while they are getting to the surface, he has lamps prepared, first-aid supplies made ready, bandages, splints, oil for burns, etc. Feeling that it is their common duty to their fellow workmen to render them every assistance without thought of compensation or favor, the rescue crew starts at breakneck speed to reach the ill-fated mine.

Policeman Qualifies as Mine Inspector

When they arrive the usual conditions are found—ropes are stretched about the place, 4,000 or 5,000 men, women and children, showing symptoms of hysteria are surrounding the mine. They anxiously hurry to the roped inclosure and there meet with guards, or policemen, who have unqualified instructions not to let anyone cross the ropes. Finally one of the policemen condescends to hear the leader, and the conversation runs as follows:

Rescuers—We are officials of the High Coal Co., are equipped with first-aid supplies, safety lamps, pulmotor and other equipment and are expert mining men. We want to render any assistance we can.

Policeman—I can't help who you are; my orders is to keep everybody back of that rope, and orders is orders, so I guess you'll have to stand back like the rest.

Rescuers—It's true orders are orders, and we don't wish to argue on that point. A few minutes lost in arguing might mean the loss of a few lives in that mine, and if you'll only let us pass, we are sure we can be of comfort to those men.

Policeman—That's what they all say, and every man, woman and child would cross the ropes if we would let them, so you can't cross the rope, and that goes, see?

Rescuers—Well, Mr. Policeman, we don't have to get orders to jump into the river to save a drowning child; we don't have to get orders to get a man off the street-car track with his leg ground off, and what's more, we don't have to get orders to go to save entombed miners, and we can't stand this delay any longer and are going to pass you at all risks.

Policeman—If you cross those ropes, I'll show you what the consequence will be.

Rescuers Have To Wait To Be Invited

This heroic band of rescuers, which is by this time heated to incandescence, does cross the rope, and what happens can be imagined. They return to their own mine and sit down, and are discussing the treatment accorded them, when an automobile drives up and stops and the occupant asks them if they have any equipment and men to spare that could help down at the Black coal mine, as an explosion has occurred there. It is needless to say it will take all the grace they possess to return to the mine, but nevertheless they will do so. However, several hours have elapsed with their attendant toll of lives due to delay.

The state's representative, the mine inspector, is probably two days' journey from this particular mine, being in a remote section visiting another colliery, and it is he who assumes charge of the rescuing squads upon his arrival. May I ask who is to take charge before his arrival? Who is to arrange the rescue squads? Who is to direct their course of travel? And may I ask if the entombed miners should be made to suffer from this lack of system? Should they not be allowed all possible assistance and precautions to avoid delays in rescue? It seems to me there is great laxity in this respect.

I would suggest that in every community where there are two or three mines, a responsible man who would volunteer his services (and there are lots of such men) should be appointed a "rescue expert" or be given some other like title and a badge or other credential to designate his authority. This man could be best chosen by the district mine inspectors. In case of accident this "rescue expert" could telephone to adjoining plants and villages and in an hour he could have a squad of experienced mining men at the point of the accident. Thus he could begin the work of rescue probably a day or a day and a half before the state's representative would arrive.

Who Leads Rescue When Inspector Is Absent?

The Vice-President of the United States takes the President's place, the assistant superintendent at a mine takes the superintendent's place when he is away, the village squire appoints a special constable when the regularly elected constable is busy. May I ask who takes the mine inspector's place when he's away? And again, if I am an entombed coal digger, may I ask if I am expected to be tortured by burns, foul air and gases and suffocated or burned to death slowly simply because no one has been appointed to act for the mine inspector while he is away?

Something should be done, and the members of the mining fraternity should not wait for legislatures to pass laws authorizing these provisions. Instead representatives of the mines within a radius of from 5 to 10 mi. should assemble and agree on a competent man for this work. This should be done without worrying whether the law would sustain such action or not. The laws do not prohibit us from doing our best to rescue the unfortunates entombed in a burning mine. I would like to hear the ideas of practical men on this subject either through the columns of *Coal Age* or by personal letter.

Recent Legal Decisions

Responsibility for Negligence of Co-Employee—A coal company is liable for death of a sweeper at a coal breaker, while employed in cleaning screenings from between tracks, due to negligence of another employee in charge of the movement of cars along the tracks in failing to give decedent adequate warning of the approach of cars. (United States Circuit Court of Appeals, Second Circuit, Oravage vs. Philadelphia & Reading Coal and Iron Co., 229 Federal Reporter, 383.)

Instructing Employees Against Dangers—Liability of an operator for death of an employee cannot be based on the mere fact that the latter was less than 16 years old; the operator merely being required to properly instruct the employee against dangers incident to the work and not known to him. The provision of the Virginia mining act which requires operators to adopt special rules governing mining operations does not require adoption of specific rules relating to ordinary and well-understood details of work. (Virginia Supreme Court of Appeals, Hughes' Administrator vs. Virginia Iron, Coal and Coke Co., 88 Southeastern Reporter, 88.)

Discussion by Readers

The Anthracite 8-Hr. Agreement

Letter No. 4—I read with interest Letter No. 3, *Coal Age*, July 15, p. 121, referring to the 8-hr. agreement in the anthracite region. By the terms of this agreement, it was feared that miners would be unable to avail themselves of the provision of the anthracite mine law that requires they shall be hoisted to the surface whenever five persons arrive at the foot of a shaft or slope.

The test of this feature of the law was made at the Nottingham colliery, Plymouth, Penn., and the miners there are to be congratulated on the step they took to relieve their fellow workmen from what would appear to be a kind of petty revenge on the part of the operators to compensate themselves in part for the increased wage scale under the new agreement.

The clause relating to time of labor reads: "An 8-hr. day means eight hours of actual work for all classes of labor at the usual working place, exclusive of noontime, for six days per week," etc. From the miner's viewpoint, the "eight hours of actual labor" can only be classed as a kind of technical revenge, since it is of no particular advantage to the company to compel miners to remain in their chambers after they have completed their day's work of blasting the coal. The argument set forth by the company was to the effect that there was a possibility of the miners' disrupting the daily routine of work by leaving the mine at any and all hours of the day.

The miners' case was argued before Judge Woodward and decided in their favor. Mine Superintendent Lewis J. Davies, of the Lehigh & Wilkes-Barre Coal Co., only carried out the instructions of his superiors when he appealed the case. In his decision, Judge Woodward stated: "All acts must have a reasonable construction and if there was any conspiracy on the part of the miners to use the act to annoy the operators by presenting themselves at unreasonably frequent intervals to be hoisted to the surface, the Court would exercise its powers to prevent such an unreasonable use of the act. But there is no evidence in this case, that there was any intention to make such unreasonable and oppressive use of the act."

While the 8-hr. agreement masqueraded as a benefit to all mine workers, the action of coal companies in denying the provision of the anthracite law conveying the right of miners to be hoisted to the surface under certain specified conditions, imposed a burden on miners at the face.

It is to be hoped that the higher court will affirm Judge Woodward's decision and avert the danger of trouble and petty strikes. Of course if they choose, operators can discharge from their employ men who are unwilling to remain in the mine during the full eight hours specified in the agreement, but this would react to their disadvantage and such a course is hardly to be expected in view of the scarcity of good miners. JUSTICE.

Wilkes-Barre, Penn.

[*Coal Age* would suggest that both miners and operators get together on this point. Let it be conceded that the frequent call for an empty cage or car to hoist men during working hours would be an unwarranted interruption of the daily routine of hoisting coal; while, on the other hand, there is no advantage in compelling miners to remain idle at the working face after having completed their day's work, and giving them an hour or so in the air and sunshine above ground will better fit them for the labor of the following day. Why can it not be arranged that an intermission of ten minutes, say at 4 p.m., be allowed and that miners who come to the shaft or slope bottom at that time can then be hoisted to the surface as the law requires.—Editor.]

Certification of Mine Foremen

Letter No. 1—There have been numerous references in *Coal Age* to the possible effect of the recent compensation laws passed in different states, in respect to safety in mines. An interesting question is involved in the Pennsylvania compensation law, under which coal companies operating in that state are authorized to employ as mine foreman anyone "who in the judgment of the operator is a person equally competent" with the holder of a certificate granted by the state examining board to candidates who have qualified by passing the required examination for mine foremen. I would like to see this question thoroughly discussed by practical mining men, as to whether or not they think such provision of the law tends to better mining conditions in respect to safety.

After giving considerable thought to the question in its general aspect, I am inclined to think that it is a great mistake—one made by men who do not have to risk their lives daily in mines in charge of foremen who have not qualified in the usual manner. The question that presents itself forcibly to the mind is: If the person so appointed by a coal company to take charge of its mine is fully competent and his appointment is not owing to inside influence, why should he not be able and willing to take the state examination and receive the indorsement of the state board of examiners as to his competency to fill the position? If the coal companies have no favors to grant, why should they ask to be permitted to appoint men to this position who have not qualified by passing the state examination? Do they consider the state examination inadequate or are the men they desire to appoint unable to show the same standard of qualification as those who pass that examination? These are pertinent questions that must be answered.

Since the new law went into effect on the first of January, one can readily see its influence on young men who should be studying the principles of mining and educating themselves to fill higher positions. Instead of this many have turned a deaf ear to entreaty, saying, "What is the use of studying to qualify for a state certificate when some boob who has a pull will get the place ahead of you?" I feel somewhat the same way myself and cannot but sympathize with ambitious young men who are thus discouraged by being refused a square deal.

It cannot be denied that the effect of this law is to discredit technical knowledge in mining and lower the high standard of qualification. My conclusion is that mining in the State of Pennsylvania has been set back several years, in respect to both safety and practice. Since the passage of the certificate law in Pennsylvania, in 1885, not only has there been a constant increase in the number of men taking the examination to qualify as mine foremen, but the mine-accident rate in the state has decreased almost in the same proportion. I notice that the number of men taking the examination this year, however, shows a decrease of interest in the study of mining. I hope to hear from others on this matter.

Madera, Penn. CERTIFIED FOREMAN.

Mine Haulage

Letter No. 1—Some time ago I remember that the question of the use of gasoline motors in coal mines excited considerable interest among *Coal Age* readers. It was claimed that such motors were cheaper to install and to maintain than any other kind of motor in use. While this may be true in respect to the first cost of installation, my experience convinces me that the claim of cheaper maintenance is far from the truth in coal-mining practice.

I believe that most mining men who have had experience with motors of the gasoline type will agree with me that when the extra time required to keep the motor in condition and the time lost when it refused to work are taken into consideration the cost of operation far exceeds that of an electric motor employed for the same purpose and under the same conditions.

A breakdown of a mine locomotive will in most cases throw the mine idle. At other times, when the attempt is made to run the mine with mules, this is only accomplished at a great loss and it is often found cheaper to shut down and wait until the needed repairs can be made and the locomotive again put in commission.

In estimating the relative cost of different types of locomotives, or other mine equipment, too much importance is often attached to the first cost, including the cost of installation of the system. In many instances the first cost of an equipment falls into insignificance in comparison with the cost of operation and maintenance. I believe this is true in respect to the relative economy of gasoline and electric mine locomotives.

Aside from the question of cost, however, must be considered the relative utility of these two types of mine haulage. In my experience in the mines of different states I found that complaints are frequent in regard to the bad odor and poisonous gases given out where gasoline motors are in use. As is well known, the mining laws of many states restrict the firing of shots to a few minutes before quitting time, so that men will not be compelled to return to the face before the smoke and gases produced will have been swept away by the air current. I would like to ask why it is not just as important to guard mine employees against the smoke and gases generated by gasoline motors.

It will probably be argued that gasoline motors are never allowed to operate on the intake airways in mines. But while this is true, it must be granted that motormen, trippriders, trapper boys and men working on the shaft or slope bottom are all exposed to the gases given off by the motor, especially if it is not working properly.

When a mine inspector finds a man working too far ahead of the air he sends him home until the place can be properly ventilated. Why should he permit these other men to work under conditions that are as bad or possibly worse? I would suggest that if the mine inspector would jump on some of these gasoline locomotives and ride around the mine a few trips with them, there would be something doing. I am glad that these questions regarding mine haulage are to be taken up and discussed in *Coal Age* and hope that much good will develop.

Belleville, Ill. MINE FOREMAN.

Waste of Material in Mines

Letter No. 7—Speaking of the waste of material in mines calls to mind the experience of a successful mine manager in France. I was working at a mine of the Noeux Coal Co., Pas de Calais. My duties in checking the cars took me often to the office, where I overheard much that was said about the great waste of material in the mines.

The former manager of the mine was a young scholar who gave no attention to small things, and the miners were left to do about as they pleased. At first the new manager was called "a fool" by some of the men, because they did not like his rules, but by perseverance he was able to enforce these in time.

The company supplied the oil burned in the miners' lamps. These lamps were filled for a 9-hr. shift, but contained enough oil to last 10 hr. The miners had the bad habit, when reaching the top of the shaft at night, of emptying the oil and wicks out of their lamps onto the ground so as to get a fresh filling for the next day. As there were 1,000 men and boys employed in the mine, this practice caused a great waste of oil and wicking, which disgusted the new manager. He at once posted a notice forbidding the practice. The men still continued, however, to empty their lamps as before, and a second notice was then posted, stating that a fine of 10c. would be imposed for every lamp returned empty. This had the desired effect, and all open-light lamps came back with the oil and wicks in them every night. I overheard in the office that this saved several barrels of oil formerly wasted.

In the same mine there was a great waste of timber, owing to many posts being broken by the heavy roof pressure. It had been the custom to cut these broken timbers into short lengths and send them to the surface where they were sold to the miners for firewood at a low price. The new manager ordered all short timber, cut from the broken props, sent to the low workings, where they could be used again as posts. It was necessary there to taper and notch them, different from the practice in this country, and for this reason the miners were not disposed to use the old timbers, as they were not cut as easily as fresh ones.

When the manager saw that much of this material was thrown aside in the waste and not used in the low seams, he ordered all the broken timbers sent at once to the surface and hired two men to cut them into proper lengths and notch and taper each post, so that the men could use them without trouble to themselves. The remaining small ends were split up and used as cap pieces where the roof was weak. This effected a great saving.

Another saving accomplished was in the mining of the coal. In those days the miners were paid by the square

meter worked, instead of by the tons of coal mined and loaded. When a miner had a long distance to handle the coal he would frequently throw much of it into the waste so as to gain time. Also, many small pillars of coal were left unmined and hidden from view by rock and refuse thrown against them. Under the new management miners were fined for all coal wasted in this manner.

One case I remember well, where a miner was caught concealing a small pillar of coal and was given the choice between a jail sentence and paying a fine of 5 fr. ($1) for each car of coal that could be loaded from the pillar. He accepted the fine, provided he was permitted to see the work performed. A dozen ¾-ton cars were loaded from this pillar, which cost the poor devil $12 of his hard-earned pay. From that time payment was made by the number of cars loaded, and there was no further trouble from coal being left in pillars or thrown into the waste.

Peru, Ill. GASTON LIBIEZ.

Accounting of Machine Coal

Letter No. 6—Referring to the several letters on this subject, I will say briefly that the method that has proved very effective in some of the largest coal mines in Pennsylvania, and which is my own personal choice, is that where each coal cutter is given a number of checks stamped with a letter, A, B, C, etc.

When a machine runner cuts coal for a new man, he hangs two of his own checks on a nail on the nearest post in that place and instructs the miner to put one of these checks, together with his own, on the first two cars of coal he loads out. The weighboss then marks the letter of this check above that miner's column on the weighsheet and, from that time until a change is made, as indicated by a check bearing another letter, all the coal coming out on the miner's check is credited to the machine indicated by the letter above the column. This system has been used for a long time by the Berwind-White Coal Mining Co., at Windber, and has given entire satisfaction. Letters are better than numbers for indicating the different machines.

In another system I have seen worked, the machine runner turns in his checks to the weighboss at the end of each week or two weeks, stating the day each man started to load coal in his section. I think the method first described is the better one of the two.

Madera, Penn. SAMUEL JONES.

Letter No. 7—In my experience as checkweighman, looking after the interests of 300 loaders and machine men, I have used two methods of keeping account of the coal cut by different machines and loaded by different miners. These have already been described in letters Nos. 1 and 2, *Coal Age*, July 15, p. 122.

I very much prefer the method given by George M. Lantz in his letter No. 2. By his scheme the machine men are given letters A, B, C, etc., in alphabetic order, and these letters are written at the top of each miner's column to indicate the machine that cut his coal. The system is very simple and involves no changes in the accountant's work.

The method described by W. H. Luxton in his letter No. 1 is also good and much used in different mining districts. It differs chiefly from that of Mr. Lantz in using numbers instead of letters to indicate the several machines. Most weighbosses, however, having become familiar with one method would not care to make a change and use letters in place of numbers, because they usually think their way is the best that can be adopted. But if a weighboss has experienced any difficulty in accounting for the coal, I would advise him to adopt the method described by Mr. Lantz, since there is always less confusion where the machines are indicated by letters instead of numbers. JAMES H. TAYLOR.

Millfield, Ohio.

The Miner and Safety First

Letter No. 20—In connection with the discussion of safety first among miners, permit me to say that the same idea should be applied to other workmen in and around the mines. On more than one occasion one finds blacksmiths, tracklayers and machinists working with poor tools that are a menace to safety.

It is every mine foreman's duty to provide his men with good tools. Badly battered tools with mushroom heads are dangerous and may cost the man who uses them the loss of an eye.

Repairmen are often called upon to drill a hole through a wall of concrete, brick or stone and, for this work, should be supplied with goggles to protect the eyes from flying bits.

Workmen sent to make repairs or changes in the breaker should not be permitted to throw old boards and timbers with spikes sticking out of them where men can trip over them and run the risk of stepping on a rusty nail that will often cause blood poisoning and may result in the loss of a foot or, perhaps, a worse accident.

Again, when a car has been loaded at the tipple and is run down the track, care should be taken not to let it bump other cars standing on the track so as to start them ahead. Recently, I witnessed a sad accident from this cause when a little fellow, picking coal on the track, was run over by one of the loaded cars standing on the switch. The loader, in running a car down the track, allowed it to strike the other cars standing there so hard that they were started ahead and caught the boy whose leg was taken off by the wheels. A little forethought on the part of the loader would have prevented this accident.

At the present time many collieries are equipped with electric power, but little attention is often paid to putting up the necessary danger signals at switchboards and other places where men can receive a fatal shock. Safety first means a lot to every man, and the workman should always give it the benefit of a doubt, remembering that "an ounce of prevention is worth a pound of cure."

Plymouth, Penn. C. ELMER HETTINGER.

Safety in Removing Gas

Letter No. 1—When we realize how many explosions occur in the coal mines of this country, the causes of which are not definitely known, we are led to reflect and consider the many things that are done so commonly in mines that they have been overlooked in the consideration of safety.

When mine inspectors and others who investigate explosions are unable to arrive at a definite conclusion as to the prime cause of the disaster, it is common for them to ascribe it to a defective safety lamp or a blownout shot

or other possible incident that may or may not have occurred. In most of these cases the man or men who could tell the originating cause of the accident are dead as a result of its occurrence. I would like to ask how it can be assumed with any certainty that a defective safety lamp found after an explosion was in that condition before the explosion occurred, while it is evident to all that it may have been rendered defective by the explosion. It appears to me a bold assumption to make in respect to such a lamp having been responsible for the trouble.

Let me, for a moment, assume that a fireboss has discovered a body of gas at the face of a chamber when making his early examination of the mine. He marks out the place and bars the entrance with a suitable danger sign. Later, having completed his examination and permitted the men to enter the mine, he or others are sent to remove the gas from the place. The work requires the erection of a brattice. In performing this task, the brattice men use ordinary steel hammers and iron nails. As the work proceeds toward the face, it happens that a glancing blow of a hammer gives a spark that perhaps ignites the gas and an explosion follows, killing these men and many others. The later investigation fails to give the true cause of this explosion, which is ascribed to any one of two or more possible causes.

Rule 23 of the bituminous mine law of Pennsylvania (1911) forbids the use of an iron or steel needle in blasting and requires the tamping bar to be of wood or tipped with copper to prevent the possible ignition of a charge of powder by a spark caused by the friction of the iron or steel against the coal. I want to ask why it is not just as necessary to take the same precaution and use copper nails when erecting a brattice for the removal of gas from a place. Would it not be well, also, to use a hardwood mallet or a hammer having a copper face.

It will be remembered that last year an explosion occurred in Orenda mine No. 2, at Boswell, Penn., causing the death of 16 men. No one survived to tell how the accident happened. The section of the mine in which it occurred was worked exclusively with safety lamps. All that is known is that the fireboss found explosive gas the same morning in that section, and the brattice men were at work removing the gas when the explosion occurred. These men were all killed.

I make the foregoing suggestion, believing that if such precautions were to be taken when erecting brattices for removing gas, many accidents would be avoided, which would not only be worth much to insurance companies who must pay compensation for the accident, but more to the dependent families of the workmen.

Adamsburg, Penn. NELS G. BOLLING.

Detecting Gas by Smell

Letter No. 17—The more I read the letters on detecting gas by smell, the more I am convinced that the majority of the writers are correct in their claim that marsh gas can be detected by its odor in the mine.

My duties as fireboss bring me into daily contact with explosive mixtures of marsh gas, and I can say that in seven places out of ten I am able to detect the presence of the gas before raising my lamp to make a careful test. I believe there is more to be learned in regard to the character of the gaseous mixture found in the mine, which we described as "firedamp." When we consider that the information contained in these letters describes conditions not only in different states but in England and in other parts of the world, and when we remember that the geological conditions vary widely in these localities, it is easy to believe that the gas will have a different smell in different places.

I quite agree with the statement of one writer that the odor of the gas is more quickly perceived in wet than in dry places. Where a place is "bleeding," the water oozing from the pores of the coal, and one can plainly hear the hiss of the escaping gas, a fireboss may be deceived in respect to the smell of the gas if he is unable to get a cap on his lamp. Because of the rapid diffusion of the gas into the air current, the percentage of gas is too small to give a cap on the lamp or to be detected by the sense of smell. It would be a mistake to lead men to think that gas can always be detected in the mine by its smell, and we must remember that some persons have a keener sense of smell than others, just as some safety lamps are more sensitive and show smaller percentages of gas than other lamps.

One morning when making my early rounds and within 18 ft. of the face of one of the west entries, I felt a choking sensation. The entry was going to the rise, the face being 72 ft. ahead of the last open crosscut, only two cuts having been made in the breakthrough started near the face. I immediately stooped and raised my lamp toward the roof and found a large body of gas that gave an elongated cap on the lamp, although I could detect no smell. The action of the flame was different from that caused by marsh gas, and I was satisfied that the mixture was quite different from that generally encountered.

Having fenced off the place, I completed my examination and, after marking the board outside, returned to clear out the gas from the head of this entry. Extending the canvas so as to cause the air current to sweep the face of the heading, I made another test and found the place clear except for a little body of gas lodged in a small pothole in the roof. This gas acted the same as that just described. Feeling certain that there was no danger and my curiosity being aroused, I raised a naked lamp into the hole and was not surprised to find that the gas was inexplosive. Therefore I would say that we must not treat this matter lightly. The subject is worthy of discussion.

Millfield, Ohio. FIREBOSS.

Letter No. 18—My belief is that it is possible to detect the presence of marsh gas by its odor and also by its effect on one's ears and without the use of a safety lamp.

I can indorse what Philemon Wattiaux says in Letter No. 2, *Coal Age*, May 27, p. 938, in regard to the Drocourt mines, which are the deepest and most gassy mines in northern France. I worked in those mines, myself, some years ago. The coal was alive with the escaping gas, which one could not only hear but smell, as it had a peculiar odor that I at first thought came from my lamp or was produced by the heating of the gob. The miners working with me told me that it was the gas coming from the coal. I remember that I became very dizzy and there was a buzzing or singing in my ears. The miners told me they had the same buzzing in their ears.

No name was given to the gas by the French miners, who simply called it "gas." Last winter, however, the

superintendent of the La Salle rescue station gave me a pamphlet entitled "Gas and Ventilation." I learned a great deal about mine gases in that pamphlet and found that there are different kinds of gases in the mines. The pamphlet teaches that marsh gas has no smell. On that account I have been afraid to say that I could smell the gas in the mine and waited to see what other miners more experienced than myself would say, and I find that they have the same experience as I had in the French mines.

A few years later I worked for a time as a miner in two collieries at Charleroi, Belgium, and had the same experience there. On my return to France I found the mines more comfortable than in Belgium, because, being shallow, they were cooler and less gassy. I hope to hear what other miners will say, so that we can have a better judgment and knowledge of the gas.

Peru, Ill. GASTON LIBIEZ.

The Efficient Fireboss

Letter No. 24—The many letters on "The Efficient Fireboss" have been of deep interest to me, but in attempting to tell what constitutes efficiency in that position most of the writers, in my opinion, drift away from the point under discussion.

It is clear that an efficient fireboss must have a thorough practical knowledge of all mining methods and be well acquainted with the mine laws of the state, in as far as they relate to his duties in the mine. He must be of good moral character and known temperate habits, conscientious, sincere, industrious and firm in the performance of his duties as he understands them. He must allow no one to change his convictions in regard to dangers that he knows exist.

An efficient fireboss will be thoroughly acquainted with the properties and behavior of the different mine gases. On this knowledge he must base his reports of gas found in the examination of the mine. The fact that the safety and lives of all employed in the mine are in his charge calls for the highest efficiency of a fireboss. Questions of the dangers encountered while performing his work and the daily output of the mine are not concerned directly in this discussion.

In my opinion, the work of a fireboss should be restricted wholly to the examination of the mine for the purpose of ascertaining what dangers, if any, exist therein. He should report these dangers to the mine foreman, whose duty it is to attend promptly to their removal.

It has been suggested that the fireboss often receives no credit or thanks for doing his duty. When that is the case, it shows the inefficiency of the mine foreman, who will eventually suffer for his own inaction, since the efficiency of the fireboss depends in a great measure on that of the foreman. A really efficient foreman will not fail to give his firebosses whatever credit is their due, and show his appreciation of their efforts to increase the output of the mine by giving close attention to the working places in their charge. No efficient foreman will ask a fireboss to break any of the mining laws of the state or to go contrary to the rules of the mine, knowing that he would thereby endanger life and property.

Referring to what has been said in regard to the work of a fireboss calling him into the mine in the lonesome hours of the night and incurring many dangers, few firebosses think this a hardship. They understood the conditions involved in the work when preparing themselves for the position they fill. I agree, however, with those who have condemned the writer of Letter No. 6, who did not hesitate to criticize Old Fireboss' Letter No. 1, where, it seems to me, no criticism was due.

In closing, permit me to say that W. T. W. in his Letter No. 11, *Coal Age*, June 17, p. 1065, expresses my views when he says, "It takes years for a man to become a thoroughly efficient fireboss." I have been pleased with the many good suggestions in the letters written on this subject. ELMER FULTON.

Spangler, Penn.

Letter No. 25—I have been greatly interested and, at times, amused in reading the various letters that have discussed the efficiency of firebosses. I note that many of the writers expect too much of a fireboss.

A fireboss is only a fireboss—nothing more—and, while there is no denying the fact that the position involves great responsibilities, let us not forget that the chief duty of a fireboss is to examine for gas. It is not his duty, as one writer suggests, to discipline men whose places he is employed to inspect. In my opinion, the disciplining of men in the mine is the sole duty of the foreman.

Referring to Letter No. 16, *Coal Age*, July 1, p. 42, Forney L. Parker says, "Men naturally come to trust the judgment and seek the advice of such a one [fireboss], while they fail to show the same respect and confidence toward a fireboss who never acts on his own decisions but prefers to consult the foreman before doing what lies in the line of his own duties." As a mine foreman, I am free to say that I would object to a fireboss exceeding his authority. The law defining the duties of the fireboss, in most states, is very clear. After finding a dangerous condition to exist anywhere in his section, the law requires a fireboss to use the necessary precautions and report the condition at once to the mine foreman. System is particularly necessary in the operation of a mine and if the fireboss, as one writer tells us, "should not leave the mine until the men have all gone home in safety" I would suggest that he should also be very sure that the mine foreman went with them. Ha!

In my experience I have known many men who started in as firebosses and, feeling their own importance, exceeded their authority, in several instances raising h— with the men. It is needless to say that their term of office was short and rightly so, because where a fireboss continually interferes in matters that do not pertain to his duties, it is impossible for the foreman to maintain the control of his men that is always essential to successful organization.

I do not wish to be understood as under-estimating the work of an efficient fireboss. I have been a fireboss myself and know the value of a good man in that position. But we should bear one thing in mind and it is this: The fireboss and the foreman are two separate cogs in the machine, and the efficiency of the working force is only complete when each performs the duties required of his office. It follows, conversely, that if one of these cogs in the machine becomes displaced chaos is the result. WILLIAM CROOKS, Mine Foreman,

Kimberly, Ala. Central Coal Co.

Inquiries of General Interest

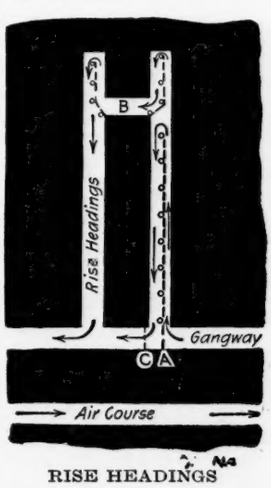
Removing Gas in Rise Headings

Kindly explain the method of removing gas from a pair of rise headings driven on a pitch of 18 deg. The headings have been advanced a distance of 35 yd. above the gangways and are generating much gas, which has completely filled both headings. SUPERINTENDENT.
Gibson, N. M.

Our correspondent does not state what means or methods were used in attempting to remove the gas accumulated in these headings. It may be assumed, however, that the gas was so strong that it resisted the attempt to force the air current up the first heading, through the crosscut and down the second heading to the gangway.

Any large accumulation of marsh gas in rise headings or carbon dioxide (blackdamp) in dip workings is often difficult to remove, because the specific gravity of the gas in each case forces it to the face of the pitch or dip, where it tends to remain in spite of the attempts to drive it out by deflecting the air current against it. The work of removal must then often be accomplished by degrees or a little at a time.

Referring to the accompanying figure, which shows a pair of headings driven to the rise of the gangway and the intake aircourse below, and assuming that the headings are each full of gas, the work must be commenced by erecting a line of brattice starting at the lower rib of the gangway opposite the mouth of the nearest heading. Approach must be made from the intake side and the brattice, starting from *A* on the gangway, must be extended gradually up the first heading, about 2 ft. from the near rib. As each post is set successively a few feet farther up the pitch and the canvas nailed to it, time must be given for the air current to clear away the gas a little beyond so as to give opportunity to set another post and again extend the brattice.



RISE HEADINGS

In the figure this line of brattice is shown by the dotted line in the heading on the right, as extended almost to the crosscut *B*, which with the portion of the two headings above and the left-hand heading below is yet full of gas. Thus far, the gas has only been removed from the first heading on the right up to the crosscut.

The work is now continued by extending the brattice to the face of the right-hand heading, the air returning as before down the other side of the brattice to the gangway. When the first heading has thus been cleared of gas the brattice is broken at a point just below the crosscut and the end of the canvas carried across to the lower rib of that opening, as indicated in the figure, so that the air then starts to return through the crosscut and the heading on the left.

At the same time, the brattice must be broken on the gangway and pushed forward to the point *C* beyond the mouth of the first heading. The line of brattice in that heading can now be removed, but ample time must be given for the air to clear the gas from this heading and the crosscut. As soon as this is accomplished a new line of brattice is started from the lower corner of the crosscut on the left-hand heading and extended to the face of that heading as shown by the dotted line in the figure. By this means both headings will, in time, be cleared of gas. The work must be done slowly and only experienced men using safety lamps must be employed.

Triple-Plunger Mine Pump

Will you kindly state what yield may be expected from a triple-plunger mine pump located at the foot of a 13-deg. slope 600 ft. long? The plungers are 5x8 in., and each makes 40 strokes per minute. The pump discharges into a 3-in. column pipe laid in the slope. Also, please state what steam pressure will be required at the throttle to operate this pump under the given conditions.
Trevorton, Penn. A. DENNISON.

Assuming that this pump is in fair condition, the water-end efficiency may be taken as 85 per cent. of the plunger displacement. At a speed of 40 strokes per minute, the yield of a single cylinder in gallons per minute is calculated by the formula

$$G = \frac{0.85(0.7854 d^2 ln)}{231}$$

in which G = discharge of one cylinder (gal. per min.), d = diameter of plunger (in.), l = length of stroke (in.) and n = number of strokes per minute. Substituting the given values in this formula and multiplying by 3, we have for the discharge of a triple-plunger pump,

$$G = \frac{3 \times 0.85(0.7854 \times 5^2 \times 8 \times 40)}{231} =$$

say 70 gal. per min.

The steam pressure required at the throttle to operate this pump under the given conditions must somewhat exceed the actual head of discharge, or the rise of the slope plus the suction lift of the pump plus the friction head due to the flow of the water in the column pipe. In this case, owing to the low velocity of the water in the column pipe, the friction head can be ignored, and the actual head against which the pump operates is the rise of the slope plus the suction lift. The former is 600 × sin 13 deg. = 600 × 0.225 = 135 ft., and adding, say 10 ft. for suction lift gives a total discharge head of 145 ft., which corresponds to a pressure of 145 × 0.434 = say 63 lb. A steam pressure of 65 to 70 lb. should therefore be maintained at the throttle to assure the proper action of the pump.

Examination Questions

Miscellaneous Questions

(*Answered by Request*)

Ques.—At the bottom of a shaft 300 ft. deep a rock tunnel 7 ft. high and 12 ft. wide is driven, and a dam is built in this tunnel. When the shaft is full of water what is the pressure per square inch and the total pressure in short tons on the dam, the shaft being of the same dimensions as the rock tunnel?

Ans.—Whether the dimensions of the shaft are greater or less than those of the tunnel will make no difference in the answer to this question, which depends on the head of water and the wetted area of the dam, the former determining the pressure per square inch and the latter the total pressure exerted on the dam. Thus the pressure on the dam due to a head of 300 ft. is $300 \times 0.434 = 130.2$ lb. per sq.in. Taking the wetted area of the dam as equal to the cross-section of the tunnel, or $7 \times 12 = 84$ sq.ft., the total pressure on the dam is $130.2 \times 84 \times 144 \div 2{,}000 = 787.45$ short tons.

Ques.—A furnace shaft is 1,320 ft. deep, the average temperature in the downcast shaft is 60 deg., that in the upcast 190 deg., the average barometer 28.75 in., and the quantity of air in circulation 200,000 cu.ft. per min. (a) Find the weight of a cubic foot of the downcast and upcast air, respectively. (b) Find the ventilating pressure at the foot of the shaft in pounds per square foot and in inches of water gage. (c) Find the weight in foot-pounds per minute and the horsepower of the ventilation.

Ans.—(a) The weight per cubic foot of downcast air (dry) is

$$\text{Downcast air,} \qquad w = \frac{1.3273 \times 28.75}{460 + 60} = 0.0734 \; lb.$$

$$\text{Upcast air,} \qquad w = \frac{1.3273 \times 28.75}{460 + 190} = 0.0587 \; lb.$$

(b) The difference in weight of the downcast and upcast columns for a depth of 1,320 ft. is therefore $1{,}320(0.0734 - 0.0587) = 19.4$ lb., which is the ventilating pressure in pounds per square foot at the foot of the downcast shaft. The corresponding water gage is $19.4 \div 5.2 = 3.73$ in.

(c) The work performed on the air is found by multiplying the quantity of air in circulation (cu.ft. per min.) by the unit of ventilating pressure (lb. per sq.ft.), which gives in this case $200{,}000 \times 19.4 = 3{,}880{,}000$ ft.-lb. per min. The horsepower on the air is therefore, $3{,}880{,}000 \div 33{,}000 = 117.5+$ hp.

Ques.—The volume of air in a return airway is 55,000 cu.ft. per min., and it contains 1.23 per cent. of marsh gas. What additional volume of air is required to reduce this gas to 0.5 per cent.?

Ans.—The volume of gas in the return current is $55{,}000 \times 0.0123 = 676.5$ cu.ft. per min. In order that this volume of gas shall be 0.5 per cent. of the return current after adding fresh air to it, the volume of air and gas must be $676.5 \div 0.005 = 135{,}300$ cu.ft. per min. Therefore the volume of air to be added to produce this condition is $135{,}300 - 55{,}000 = 80{,}300$ cu.ft. per min.

Ques.—What three parts of a hoisting apparatus at a mine shaft must be examined every day they are in use?

Ans.—It is important to examine carefully the hoisting rope in the shaft, the brake on the drum and the safety catches on the cage.

Ques.—An airway has three sides whose lengths are 12, 18 and 26 ft., respectively. The length of the airway is 1,850 ft. What are the perimeter, sectional area and rubbing surface of the airway, and what quantity of air will be passing, in cubic feet per minute, the velocity of the air current being 6.5 ft. per sec.?

Ans.—The perimeter of this airway is $12 + 18 + 26 = 56$ ft.

Since the airway has three sides, its cross-section is represented by a triangle whose area may be calculated directly from the lengths of its sides. Thus, calling the three sides of the triangle *a, b, c,* respectively, their half-sum *S,* the sectional area *A* is given by the formula

$$A = \sqrt{S(S-a)(S-b)(S-c)}$$

The half-sum of the sides or the half-perimeter of the airway is $\frac{1}{2}(56) = 28$ ft. Hence, substituting the given values in this formula, we have for the sectional area of the airway

$$A = \sqrt{28(28-12)(28-18)(28-26)} = 94.65 \; sq.ft.$$

The rubbing surface of the airway is $1{,}850 \times 56 = 103{,}600$ sq.ft.

For an average velocity of 6.5 ft. per sec., or 390 ft. per min., the quantity of air in circulation in this airway is $94.65 \times 390 =$ say 36,900 cu.ft. per min.

Ques.—A volume of 100,000 cu.ft. of air per minute is measured on the main return airway and found to contain 3 per cent. of marsh gas. What reduction of air would render the mixture explosive?

Ans.—The volume of gas in this air current is $100{,}000 \times 0.03 = 3{,}000$ cu.ft. per min. The lowest explosive limit of a mixture of pure marsh gas and air is reached when the gas is 7.14 per cent. of the mixture. Therefore, if 3,000 cu.ft. is 7.14 per cent., the total volume of air and gas at the lower explosive limit is $3{,}000 \div 0.0714 =$ say 42,000 cu.ft. per min. Hence, the amount that the air entering the mine must be reduced to obtain this result is $100{,}000 - 42{,}000 = 58{,}000$ cu.ft. per min.

Ques.—What are the highest and lowest explosive limits and the maximum explosive point of mixtures of marsh gas and air?

Ans.—The highest explosive limit of pure marsh gas and air is reached when the mixture contains one volume of gas to five volumes of air, or 16.67 per cent. of gas. The lowest explosive limit is reached when the proportion of gas to air is 1:13, the mixture then containing 7.14 per cent. of gas. At the maximum explosive point the proportion of gas to air is 1:9.57, or when the mixture contains 9.46 per cent. of gas.

Coal and Coke News

Washington, D. C.

A second supplemental report has been entered by the Interstate Commerce Commission in the case involving the coal rates from Oak Hills, Colo. In the original finding the Commission held that the divisions accruing to the Denver & Salt Lake Railroad Co. out of the joint rates on bituminous coal from Oak Hills, Colo., to destinations on the Chicago, Rock Island & Pacific Ry. should be $1.18 per ton on all kinds of coal but nut, slack and pea. The division was fixed at $1.12 per ton on these grades. This division was affirmed by the Commission upon its rehearing with the modification that when the rate on nut, slack, and pea coal is the same as that on lump coal the Denver and Salt Lake R.R. shall receive a division on nut, slack and pea coal of $1.18 per ton.

A forth-section order granting to the Missouri, Kansas & Texas R.R. permission to charge lower rates on coal from mines in Illinois to Moberly, Mo., than to intermediate points has been entered by the Interstate Commerce Commission. The rates to be applied via East St. Louis were to be $1.33 from mines in Group 1, $1.40 from mines in Group 2, $1.475 from mines in Group 3, and $1.50 from mines in Group 4, per ton of 2,000 lb. It was stipulated by the Commission, however, that the rates to the intermediate points shall not exceed the rates to Moberly.

HARRISBURG, PENN.

Employees injured while engaged in "horse play" during hours of employment cannot be considered as coming under the State Workmen's Compensation Act, the board decided in sustaining the referee in refusing to award compensation to the dependents of Francisko Tomsoska, formerly employed by the Pressed Steel Car Co. in the Pittsburgh district.

The case presented some unusual features, and the board found that Tomsoska, and a fellow workman were cooling themselves with a compressed air hose and a current was directed in the course of what is termed "horseplay" into the man's body, causing death. The decision says that the board regards the case as one coming from injuries "from sportive acts of fellow workmen in which the injured himself indulges." It is stated "There must be no confusion in the decisions that such injuries do not arise out of employment. It seems to us that it would be at variance with common sense to find that where the deceased invited his companion to do what he did that he was not in the course of his employment'. He temporarily forsook his occupation, took himself out of the course of his employment and indulged with his companion in 'horse play' that ought not to involve his employer in any responsibility."

An impression is gaining that an injured employe has a right under the law to engage any physician he may chose at the expense of the employer. This impression is incorrect, counsel to the board says, and may lead to confusing situations. The law puts upon the employer the responsibility of providing medical attention for the injured employee. Most employers have their physicians named, and these physicians are to attend the injured employee, unless the employee refuses to accept such attention. This refusal, however, absolves the employer from payment for medical attention, and may complicate efforts to collect the compensation claim.

The Board receives many inquiries asking, if the employers are responsible for injuries to the employees while going to or coming from work. Such injuries, it is said by the board, are not compensible, unless the injury going home from work or to work was sustained upon the premises of the employer and caused by a condition which the employer could have remedied by making his premises safe.

Disease Is not Compensable

Chairman H. A. Mackey, of the State Compensation Board, in an opinion filed in support of refusal to grant compensation to the widow of Phillip Dodson, of Altoona, says with considerable emphasis that the law does not contemplate a pension system.

In deciding the case the chairman finds that Dodson did not die from effects of an injury received while at work, but from disease and he strongly asserts that the state does not intend to have the compensation system turned into a pension plan.

Mr. Mackey says:

It must be borne in mind that compensation laws do not contemplate the creation of an insurance fund out of which the dependents of every deceased workman can be paid regardless of the cause of death. The scheme of compensation must be equally well balanced or it cannot survive.

The Pennsylvania Workmen's Compensation Act, is not a license to confiscate the property of an employer. Money cannot be taken from one man and paid to another without due process of law and that means that there must be competent, reliable and substantive evidence to show that an accident happened while the employee was engaged in the course of the employer's business and that the injury thus sustained was the proximate cause of death. As we have before said, sympathy must not blind the eyes of our referees to the legal requirements necessary to sustain an award.

We have no disposition to interfere with the decisions of referees that involve, solely, the credibility of witnesses; but in order to sustain this award we would be compelled to adopt a conclusion that does violence to the medical profession as well as runs counter to our every day experience.

Individual cases are but incidents in the administration of this law; while the facts surrounding any one particular case must not cause any deviation from the true principle that must govern all. The administration of compensation laws must be marked by even-handed justice. The same rules of evidence and principles of law apply equally to the injured, the dependents, and to the employer. The moment we depart from this thought a compensation law ceases to be a great humanitarian measure of untold value to the employee and of great economic advantage to the employer, but becomes a socialistic propaganda that cannot survive in an enlightened community.

A Possible Coal Shortage

According to reports received by the Anthracite Bureau of Information at Wilkes-Barre, there is good reason for apprehension of a serious shortage in the coal supply for the coming winter. It is true that as compared with 1915 the production for the first six months of 1916 has shown an increase of nearly 1,100,000 tons, but it must be remembered that the proportion of the small or steam sizes has increased more rapidly than the prepared or domestic sizes, and there is not as much of the product available for household purposes as the total increased production might indicate.

The shipments of anthracite in June 1916, amounted 5,636,975 long tons, and while these exceed those of June 1915, by about 180,000 tons, they were approximately half a million tons short of the average monthly shipment for April, May and June, 1914, and were more than a million tons less than the maximum tonnage for any one month shipped from the anthracite region.

The anthracite mines are now working to their utmost capacity, an unusual condition at this time of the year. The producing capacity of the mines, however, has been much decreased by shortage of labor. There is no reason to believe that the situation will improve during the coming fall, and if in addition to decreased output, on account of labor shortage, mining operations and railroad transportation are interferred with by the weather conditions or otherwise it will be extremely difficult to meet the demand during the winter months.

The storage plants which at the beginning of last season were well stocked, the supplies at that time being variously estimated at from 7,000,000 to 9,000,000 tons, are now practically depleted.

In the face of these conditions consumers would do well to heed the warning and place orders now when there is opportunity to obtain their supply.

Attorneys Collect Large Fees

To protect persons entitled to compensation, the Workmen's Compensation Board on Aug. 4, directed the following communication to all insurance carriers insuring against the compensation liability in Pennsylvania:

"It has come to the attention of the Workmen's Compensation Board that in certain cases where compensation has been paid under agreements of awards to the attorneys of claimants, the attorneys have retained or induced the claimant to pay to them exorbitant fees or unduly large percentages of the installments paid, without having had their fees approved by the board as required by the act.

"The board emphatically disapproves of such practice on the part of the attorneys. In order that this may be impossible in the future, the board requests you to pay all compensation due, under either an agreement or an award, direct to the per-

son entitled thereto, even though such person be represented by an attorney of record, unless the attorney shall furnish to you the board's approval of his claim for legal services and expenses."

PENNSYLVANIA

Anthracite

Hazleton—A truck belonging to a local contractor while delivering 160 boxes of dynamite to the strippings of the Lehigh & Wilkes-Barre Coal Co. at Treskow was recently struck by a Jersey Central coal train. The dynamite did not explode.

Petty mine strikes that have occurred at several collieries in this district during the past few weeks will come before the Conciliation Board. Trouble was experienced at Beaver Brook, Panther Creek and in the Schuylkill region. S. D. Warriner, of the Lehigh Coal and Navigation Co. a member of the board has returned from a trip to Alaska, and the meeting will be called this month.

Pottsville—The machinists of the Philadelphia & Reading Coal and Iron Co.'s repair shop here have been notified of a 5 per cent. increase in wages, this being the second increase this year. The men also had their hours reduced from nine to eight.

Lansford—The Lehigh Coal and Navigation Co. is about completing the erection of 30 modern tenant houses for the use of employees at the big power plant at Hauto.

Archbald—Two men were killed and a third injured on Aug. 3, at the Riverside Colliery, when a premature blast exploded catching them before they had time to get to a safe place. Joseph Mareino, the miner, was driving a heading and had prepared a blast and was tamping it home when the explosion occurred. His two laborers caught the full force of the blast and were instanaly killed, while the miner was badly cut and burned about the head and body.

Scranton—Officials of coal companies in this region state that the mines are being worked to capacity, and that there were sufficient orders on hand to continue full time throughout the remainder of the summer months. At the offices of the Delaware, Lackawanna and Western, it was stated that many of the big plants of the East are stocking up with coal in preparation for a railroad tieup, such as resulted last year. Thousands of tons of coal are being laid in stock by families in this section, in view of the 10c. a ton increase, which takes effect in September.

Plymouth—Twelve loaded cars dropped down No. 3 shaft of the Delaware and Hudson Co. at Larksville on Aug. 4. No one was injured in the accident but the mine was damaged to such an extent that operations had to be suspended.

Bituminous

Bensereek—The mine of W. H. Hughes & Co. resumed work on Aug. 4, after having been idle for four months as the result of a strike. The Puritan mine is also closed on account of similar trouble.

Brownsville—All previous records for coal shipments through Lock No. 5 on the Monongahela river, were broken during July. Lockmaster C. W. Keibler reports that during that month 8,245,000 bushels of coal passed through the lock to the Pittsburgh district. The record is a million bushels ahead of any previous month in the history of the bituminous industry, and 2,000,000 bushels above the average monthly shipments. Unprecedented activity in the fifth and sixth pools since recent labor trouble settlements, are responsible for the tremendous output.

Uniontown—The receivership appointed Jan. 19, 1915, for Josiah V. Thompson, coal land owner and banker, was held to be valid in a decision recently handed down by the court. The court refused permission to Mrs. Elizabeth Kremer to intervene in the receivership proceedings and denied her application for privilege to issue execution on her judgment for $3,698 against Thompson's property. The decision means that the appointment of receivers for the estate will stand. Judge Van Sweringon held that it was legal to appoint receivers for the property of an individual under circumstances such as surrounded the Thompson estate. There is nothing left now to hinder the receivers and the committee of creditors from proceeding to dispose of the property under the direction of the court and applying the proceeds to the payment of the claims of the creditors.

Coal and coke companies in this region intend to help the movement to raise a fund sufficient to purchase a motor ambulance for the Uniontown Hospital. It is said that these corporations have promised to make substantial contributions, amounting to possibly one-half of the purchase price of the machine.

Portage—Fifteen mines were recently closed down, and about 2,000 miners made idle by a wreck on the Martin's branch of the Pennsylvania R.R. east of Portage. A broken flange on one of the coal cars derailed eleven cars, destroying the tracks and damaging the cars somewhat. No one was injured.

WEST VIRGINIA

Beckley—The Beckley Smokeless Coal Co. at Besco, recently loaded and shipped four cars of coal. This was the first shipment to be made over the new Stone Coal extension. It is reported that the machinery in the new tipple of this firm is working smoothly and to great advantage.

Charleston—Indications are strong that there is an acute scarcity of laborers at mines and lumber camps in West Virginia. Frequent letters are received by local employment agencies requesting that men be rushed to certain camps as soon as possible. It is said that mine and mill operators in the southern section of the state are feeling the labor shortage most acutely.

Sullivan—The Piney extension of the Virginian R.R. is being built as rapidly as possible, and it is said that this will be graded and partly railed by October. The new mines being developed on this line are being pushed with all speed.

Wheeling—West Virginia coal operators are continuing measures to avert what they believe may be a serious situation this fall when the heavy movement in the coal field begins. Mid-summer is usually the lowest ebb of the coal traffic, but a shortage of cars is being keenly felt, and operators are fearful as to consequences once the heavy movement begins. Kentucky and southern Ohio operators are also feeling the shortage of cars.

The State Mining Department has inaugurated a system of free schools for miners in order to improve mining methods and conditions, and to assist in educational and safety campaigns. Lantern slides and moving pictures will be used to show the men how the camps may be made sanitary and attractive; how accidents happen and how they may be prevented; safe methods of under-cutting coal by pick and by machines, and the proper handling and storing of explosives.

KENTUCKY

Frankfort—The State Railroad Commission has granted the Illinois Central R.R. relief from the long and short haul provision on coal hauls from Providence and other western Kentucky points to Louisville and vicinity.

OHIO

Martins Ferry—It is reported that 4,000 more miners could be used in this sub-district. Approximately 13,500 men are now employed here, this number being about 150 below the normal. A shortage of cars and labor is all that keeps the mines in the sub-district from working to their full capacity. Every mine is in operation, and some of them are attempting to get more men. It is alleged that the sub-district is now more prosperous than ever before in its history.

ILLINOIS

Carlinville—The hoisting record at the Carlinville mine was broken recently, when 606 cars were hoisted. The previous record was 548 cars.

Belleville—Fire was discovered Monday in the Eldnar Coal Co.'s mine here. When the miners went to the mine to go to work they found the shaft filled with smoke. Smoke helmets were sent for and County Inspector Wright directed the fight. The flames were extinguished. The fire is supposed to have been started by shot firers Friday. The mine was closed down Saturday and so the flames were not discovered until Monday.

FOREIGN NEWS

London, Eng.—South Wales miners are said to be disregarding the promises made by their federation that they would remain at work during the usual August holidays and do everything in their power to aid the allies. Dispatches from towns in South Wales state that thousands of miners are leaving with their families for seashore resorts. All trains in the South Wales districts are said to be crowded with excursionists.

PERSONALS

George Watkin Evans, consulting mining engineer, of Seattle, Wash., recently made a trip to Chicago on professional business.

W. J. Kearns, formerly superintendent of the Isabella mine, is now connected with the United Fire Brick Co., as traveling representative.

William Golledge who has been mine foreman of No. 1 mine for the West Virginia-Pittsburgh Coal Co. has resigned and is now spending a vacation at Zoar, Mass.

Duncan C. Kennedy was recently appointed as secretary of the Kanawha Coal Operators' Association. He had tendered his resignation last spring, but the association induced him to continue as its secretary.

H. M. Crankshaw is now manager of the Cranberry Division of the Lehigh Coal and Navigation Co. as well as manager for the Harwood Coal Co., the former concern having recently purchased the interest of A. Pardee & Co. in the Cranberry Colliery. Between Cranberry and Harwood probably 1,000,000 tons of coal will be produced next year.

OBITUARY

C. F. Hammond, of Moundsville, W. Va., 56 years of age, was recently killed in a coal mine at Parr's Run when he came in contact with a charged feed wire. Mr. Hammond, a director of the company, was making an inspection, and went inside the drift mouth to enjoy the cool air. In sitting down he failed to notice the feed wire, and as he leaned back touched it, and was killed before aid could reach him. He is survived by a wife and three children.

PUBLICATIONS RECEIVED

"The Third Annual Report of the State Inspector of Coal Mines of Colorado." Unillustrated, 82 pp., 6x9 in.

"Gasoline," A Letter to the Senate from the Secretary of the Interior, Document No. 310. Illustrated; 27 pages; 6x9 in.

"Surface Water Supply of Virginia," by G. C. Stevens. Virginia Geological Survey, Bulletin No. 10. Illustrated, 245 pp., 7x10 in.

"Miners' Nystagmus," by Frederick L. Hoffman. Department of the Interior, Bureau of Mines, Bulletin No. 93. Unillustrated, 63 pp., 6x9 in.

"The Analysis of Permissible Explosives," by C. G. Storm. Department of the Interior, Bureau of Mines, Bulletin No. 85. Illustrated, 88 pp., 6x9 in.

"The Physical Geography of Wisconsin," by Lawrence Martin. Wisconsin Geological and Natural History Survey. Illustrated, 549 pp., 7x10 in.

"Geology and Geography of the Galena and Elizabeth Quadrangles." Illinois State Geological Survey, Bulletin No. 26. Illustrated, 233 pp., 6x9 in.

"Regulations Governing Coal Land Leases in the Territory of Alaska." Approved May 18, 1916. Department of the Interior. Unillustrated, 86 pp., 6x9 in.

"Abstract of Statistics of Steam Railways in the United States for the Year Ending June 30, 1915." Interstate Commerce Commission. Unillustrated, 10 pp. 6x9 in.

"Administrative Reports and Various Economic and Geological Papers, Year Book 1910." Illinois State Geological Survey, Bulletin No. 20. Illustrated, 165 pp., 6x9½ in.

"The Strength and Stiffness of Steel Under Biaxial Loading," by Albert J. Becker. University of Illinois, Engineering Experiment Station, Bulletin No. 85. Illustrated, 65 pp., 6x9 in.

"Industrial Accident Prevention." Special Bulletin Department of Labor, State of New York, issued under the direction of the Industrial Commission. Illustrated 54 pp. 6x9 in.

"Monthly Statement of Coal Mine Fatalities in the United States, March, 1916," compiled by Albert H. Fay, Department of the Interior, Bureau of Mines. Unillustrated, 22 pp., 6x9 in.

"Monthly Statement of Coal Mine Fatalities in the United States, February, 1916," compiled by Albert H. Fay, Department of the Interior, Bureau of Mines. Unillustrated, 20 pp., 6x9 in.

"Statistics of the Dominion of New Zealand for the year 1913, Vol. 3, Production and Finance, Postal and Telegraph," Malcolm Fraser, Government Statistician. Unillustrated 232 pp. 8¼x13 in.

"The Sand Test for Determining the Strength of Detonators," by C. G. Storm and W. C. Cope, Department of the Interior, Bureau of Mines, Technical Paper 125. Illustrated, 68 pp., 6x9 in.

"Tests of Reinforced Concrete Flat Slab Structures," by Arthur N. Talbot and Willis A. Slater, University of Illinois, Engineering Experiment Station, Bulletin No. 84. Illustrated, 128 pp., 6x9 in.

"The Feldspars of the New England and North Appalachian States," by A. F. Watts. Department of the Interior, Bureau of Mines, Bulletin No. 92, Mineral Technology 9. Illustrated, 179 pp., 6x9 in.

"Analysis of Coal Samples from Various Parts of the United States," by Marius R. Campbell and Frank R. Clark, Department of the Interior, U. S. Geological Survey, Bulletin 621-D. Unillustrated 120 pp. 6x9 in.

"Effect of Atmospheres Deficient in Oxygen on Small Animals and on Men," by George A. Burrell and G. G. Oberfell. Department of the Interior, Bureau of Mines, Technical Paper 122 Unillustrated, 12 pp,, 6x9 in.

CATALOGS RECEIVED

The Richardson-Phenix Co., Milwaukee, Wis. Bulletin No. 5. "Oil Filters." Illustrated, 24 pp., 8½x11 in.

Western Electric Co., 463 West St., New York. Catalog. "Inter-Phones and Accessories." Illustrated, 60 pp., 8x10½ in.

Gifford-Wood Co., Hudson, N. Y. Catalog No. 15. "Coal Elevating and Conveying Machinery." Illustrated, 88 pp., 6x9 in.

Allis-Chalmers Mfg. Co., Milwaukee, Wis. "Centrifugal Pumps and Centrifugal Pumping Units." Illustrated; 47 pp.; 8x10½ in.

The Sullivan Machinery Co., Chicago, Ill. Bulletin No. 70-A. "The Sullivan Rotator Hammer Drill." Illustrated; 28 pp.; 6x9 in.

C. W. Hunt Co., West New Brighton, N. Y. Catalog No. 15-3. "Hunt Cut-Off Valves for Coal, Coke, Ashes, etc." Illustrated, 28 pp., 5x9 in.

Sprague Electric Works, 527-531 W. 34th St., New York. Bulletin No. 48,907. "500-Lb. Electric Hoists." Illustrated. 8 pp., 8x10½ in. Bulletin No. 49,600. "Flexible Steel Armored Conductors, Flexible Steel Conduit, Stamped Steel Boxes, Fittings and Tools." Illustrated, 24 pp., 8x10½ in.

INDUSTRIAL NEWS

Duluth, Minn.—During the month of July 193 cargoes of coal were delivered at Duluth-Superior harbor, and while no official figures are available, indications are that the tonnage will closely approximate 2,000,000 tons.

Charleston, W. Va.—A big land deal is reported in Logan County, where the Eagle Island Coal Co. has purchased the operations of the Crown Coal and Coke Co., on its leasehold of 700 acres. The lease is understood to have brought $90,000.

Colliers, W. Va.—The West Virginia-Pittsburgh Coal Co., which owns a large acreage of Pittsburgh coal in this section, has installed an electric shovel for stripping the coal near the outcrop. The product will be marketed over the same tipple as at present used.

Williamsport, Penn.—The Standard Wood Pipe Co. has increased its output by purchasing from the Michigan Wood Pipe Co. three carloads of equipment originally operated by the Eastern Mfg. Co., of Elmira, N. Y. A new plant is also under construction.

Altoona, Penn.—The Altoona Coal and Coke Co., recently awarded a contract to the Roberts & Schaeffer Co., of Chicago, for the design and erection of a Marcus coal tipple of frame construction, having a capacity of 150 tons per hour. This will be installed at Altoona, Penn.

Meadville, Penn.—The Phenix Iron Works Co. has been reorganized, and has issued $250,000 first mortgage bonds. Improvements and additions have been made to the plant, including an extension to the foundry, additional power plant equipment and an extension to the boiler erection plant.

Bridgeport, Ohio—The Ohio Bureau of Mines rescue and first-aid car is here giving demonstrations in the Baltimore & Ohio yards. It was accompanied by the chief mine inspector and seven deputies. Many miners from this section are visiting it. Its life-saving apparatus is proving of great interest to all visitors.

Chicago, Ill.—The Cement Gun Construction Co., of 900 So. Michigan Ave., Chicago, is extremely busy this summer.

Among numerous other activities of this firm, it is engaged in waterproofing portions of a coal mine for the Cottonwood Coal Co. at Lehigh, Mont.; also waterproofing portions of a coal mine for the Alden Coal Co., at Farmington, Ill.

Mt. Carmel, Penn.—A contract calling for the furnishing of $200,000 worth of electric current during the next 10 to 15 years to the Colonial Collieries Co. by the Edison Illuminating Co., of Mt. Carmel, was recently signed. This current is to be furnished to the Natalie Colliery, and it will cost approximately $20,000 for the new lines, transformers and other equipment.

Huntington, W. Va.—Negotiations were recently closed by the purchase of the controlling interests in the Argyle Coal Co., from the C. I. Jones estate by the W. E. Thurmond estate. The Argyle Coal Co. had 1,200 acres of coal, and a single operation with a monthly output of 10,000 tons on Rum Creek, in Logan County. The Jones interest in the company is said to have brought $75,000.

Cleveland, Ohio—Nearly 500 members attended the annual convention of the Michigan-Ohio-Indiana Coal Association which was held at Cedar Point, Aug. 1, 2 and 3. The most important subject acted upon was ways and means whereby to dignify the coal business, secure for the coal man a better standing in his community and rid the trade of the wholesaler and retailer who persist in giving short weight.

St. Louis, Mo.—The Coal Operators' Traffic Bureau of St. Louis has filed an intervenor's brief with the Interstate Commerce Commission in the case between the Illinois Coal Operators' Association and the Santa Fe R.R. respecting rates on coal from Illinois and Indiana fields to Northwestern territory. The brief contends that the present rates are relatively unreasonable and unjustly discriminatory and asks that the relative adjustment existing prior to 1910 be restored.

Cleveland, Ohio—All matters of controversy between the Kanawha & Hocking Coal and Coke Co. and the Sunday Creek Coal Co., have been amicably adjusted, the former company coming into possession of its mines in West Virginia. The Sunday Creek company also assigned to the Kanawha company all contracts and prospects involving the sale of Kanawha coal. The Kanawha & Hocking company begins operating the mines at once, and preference as to output will be given to contracts already made.

St. Louis, Mo.—Missouri, Kansas and Oklahoma coal operators have gone to Washington to ask the Board of Suspension of the Interstate Commerce Commission to suspend the proposed reductions in rates on coal from the Illinois fields to the three states, pending an investigation. Illinois coal men are resisting the suspension. The reduced rate goes into effect Aug. 22 unless there is a suspension. Missouri, Kansas and Oklahoma operators say the proposed rates would practically drive them out of business.

New York, N. Y.—There were 8,103,187 tons of anthracite coal mined from the properties of the Lehigh Valley Coal Co. during the fiscal year ended June 30, 1916 according to the annual report of the company. This was an increase of 14,286 tons over the preceding year. During the same period the bituminous mines of the company in the Snow Shoe lands in Center County, produced 261,004 tons, an increase of 2,799 tons. The percentage of sizes above pea produced was 65.60 per cent., an increase of 19 per cent.

Chicago, Ill.—The Allen & Garcia Co. has been appointed constructing engineer in charge of the erection of four new mines being developed by the Columbus Mining Co., at Hazard, Perry County, Ky. These mines will be located, two in the No. 4 coal, one in the No. 6, and one in the No. 7 bed. The plants are to be modern, with steel tipples, picking tables, revolving dumps, etc. The railroad is now being built up Walker's Branch from Hazard to the mines, and erection work on the tipples will be begun this fall.

Columbus, Ohio—The Hocking Valley and the Toledo & Ohio Central railroads must file monthly reports with the state Public Utilities Commission, showing tonnage of coal shipments, together with freight charges collected thereon, the commission has ordered. The purpose of this order, it was stated, is to obtain information which will enable the commission to determine how much money must be refunded by the railroads in case a reduction in coal rates ordered by the commission is sustained by the Supreme Court.

St. Louis, Mo.—Under a ruling of the Interstate Commerce Commission, an increase of 5c. a ton in rail rates will go into effect Sept. 1 to apply on shipments of bituminous coal from Illinois and Indiana mines to points in Indiana, Illinois, Wisconsin and Michigan. It is estimated that the operators will pay $5,000,000 more each year to the railroads under the ruling. The new rate gives shippers of "dock" coal on the great lakes an advantage. Operators of the two states have petitioned the commission to equalize the rate by placing a similar burden on the dock-point shippers.

Chicago, Ill.—The Roberts & Schaeffer Co. was recently awarded a contract by the Springfield District Coal Mining Co. for the installation of a reinforced concrete re-screening plant, having a storage capacity of 500 tons, and a screening capacity of 250 tons per hour. This will be erected immediately at Springfield, Ill. The John A. Logan Coal Co. also awarded a contract to the above named company for the designing and building of a reinforced-concrete rescreening plant for installation at Logan, Franklin County, Ill. This will have a storage capacity of 420 tons, and a screening capacity of 200 tons.

Clearfield, Penn.—The fact that the New York Central R.R. Co. is disposing of some of its coal land in the Cambria-Indiana field, is arousing some interest among other operators in the same region. The coal lands recently sold by the Clearfield Bituminous Corporation, a central organization, to the Rochester & Pittsburgh, are located in Indiana County. A short time ago the coal, south of Nanty-Glo, was also sold to the Ebensburg Coal Co. If negotiations are carried out as reported, a large acreage will be added to the already extensive holding of the Rochester & Pittsburgh company in Indiana and Cambria Counties.

Columbus, Ohio—The coal contract for the Piere Marquette R.R. was awarded recently and of the total tonnage of 900,000 Ohio operators are given 510,000. This amount is to be used on the eastern division of the road. A large tonnage comes from Illinois and also other Western fields. The George M. Jones Co., which operates the Continental properties secured 300,000 tons; the Sunday Creek Coal Co., 75,000 which will be supplied from the San Toy mines; the Russell's Run Coal Co., of Pomeroy Bend, 60,000 tons and the Carnegie Coal Co., 75,000 tons. The latter tonnage will be supplied from a stripping operation on the Wabash R.R.

Clarksburg, W. Va.—The Jamison Coal and Coke Co., which operates extensively in the Clarksburg district of West Virginia, recently sold to the Baltimore & Ohio R.R., 1,500 steel hopper cars. The purchase of this equipment was made by the railroad company, subject to unexpired equipment contracts of the Jamison company. This equipment, which was formerly handled in the exclusive service of the coal company, will not become available for general distribution among the coal operators shipping over the lines of the Baltimore & Ohio R.R. Since 1910 the Baltimore & Ohio has purchased 650 locomotives, and approximately 30,000 freight cars.

Chicago, Ill.—The Allen & Garcia Co., of Chicago, was recently appointed constructing engineer in charge of the new mine of the Harrisburg Collieries Co., now being sunk near Harrisburg, Saline County, Ill. The shafts of this mine are to be 400 ft. deep, concrete lined, while the hoisting capacity will exceed 4,000 tons per day. The tipple will be equipped with loading boom, picking table, shaking screen, etc., together with a supplemental pendulum-hung screen on the fifth track for making No. 2 nut coal direct instead of using a rescreener. The shafts are now down about 70 ft., and the railroad is being constructed. It is expected to begin the erection of the building and tipple early in the spring of 1917.

Louisville, Ky.—With the workmen's compensation act of the last Kentucky legislature in effect and, it is stated, the coal operators and miners generally participating, there is a question of rates between the operators and insuring companies which is being debated with considerable vigor. The Compensation Board in this instance is urging the claims of the operators, who ask for a reduction of 22 per cent. in the rate where they supply their operatives with medical and hospital attention. The insuring companies, on the other hand, are represented as unwilling to make more than a 10 per cent. concession, while the operators show that by the companies' own analyses this service, where performed by them, costs up to 30 per cent. The contention is receiving much attention and an agreement is hopefully looked for.

Charlestown, W. Va.—Major Joseph E. Chilton recently closed a deal, disposing of a tract of timber and mineral land in Boone and Raleigh Counties to Cole & Crane, of Cincinnati. This deal was made for the Pond Fork Coal and Land Co. About 12,000 acres lying along Pond and West Fork of Coal River changed hands the consideration involved amounting to $595,000. The land is heavily timbered, and several years will be required for removing and marketing this timber, after which operations will be begun in the deposits of coal underlying it. Two extensions will be built from the Coal River division of the Chesapeake & Ohio R.R., one upon Pond Fork and the other up West Fork. This is said to be the largest land, timber and coal deal transacted in southern West Virginia for many years.

Market Department

General Review

Market steady on anthracite and production well absorbed. Bituminous stiffer and prices advance. Spurt in the export trade. Middle Western situation quiet but an active trade expected in the fall.

Anthracite—The market is steady, and sales will undoubtedly increase as the month advances, but business is rather quiet, and cool weather will be necessary to stimulate any activity. The current production is being well absorbed, and all sizes are moving readily, with the possible exception of chestnut and pea, which are inclined to be rather heavy. At outlying points shipments are going forward rather slowly, and there is some anxiety in certain quarters, as for instance, in down East centers. Retail trade is quiet, as is to be expected at this season of the year, and collections are rather poor. Shipments of Lake coal have improved slightly, but are not gaining on last season. Reports from the upper Lake ports are to the effect that the market is about as quiet as at this end. The new statement of anthracite shipments for the 7-month period show the movement to be substantially ahead of last year but not sufficiently so to anticipate an easy market.

Bituminous—The stiffening tendency in soft coal continues the feature of the trade. Prices have firmed up notably in the past week, and in some instances important advances are noted. Stocks at New England points are only nominal, while slow loading is the rule in the Coastwise trade, and sales agencies are becoming very conservative about future commitments. All indications point to a materially stiffer market as the season advances. The car and labor shortages are becoming constantly more acute, and will probably be the controlling factor in the trade before long. Steam consumption is at a heavy rate and it appears that consumers generally are becoming reconciled to higher prices.

Exports—The foreign movement is heavy, and there are persistent rumors that Great Britain is unable to furnish adequate supplies for her Allies, and that there are inquiries in this market for important tonnages for France. There is a considerable tonnage moving to the west coast of South America, and the Navy Department is taking quite a little coal. The comparatively low freight rate fixed on British steamers by the Government continue in effect, but as there is little vessel tonnage of this description available, the freight market continues to be made by neutral tonnage which commands higher figures. There is a very heavy demand for bunker coal, which is being met with difficulty, due to the large accumulation of vessels waiting for cargoes.

Lake Trade—The movement up the Lakes is only fairly heavy, shippers being handicapped by the scarcity of vessel tonnage, which still continues acute in spite of offers of increased freight rates. The activity centers largely on the steam grades, the hot weather tending to discourage any domestic business. Consumers are backward about stocking and orders are rather difficult to obtain, but on the other hand they are equally difficult to fill, due to delays in the movement, and scarcity of both cars and labor. The situation is rather mixed at the moment, but it is generally agreed that a continuation of prevailing conditions will see the fall trade opening up with unusually light stocks on hand and a rush for coal can be reasonably expected at that time.

Middle West—The domestic demand is rather quiet, as is to be expected during extremely high temperatures such as are now prevailing, but screenings are in heavy demand and are moving in a large volume. It is becoming more apparent as the season advances that there is going to be a heavy rush for coal in the fall, that some of this buying will have to appear shortly. Even as it is, the mines have been operating on a very satisfactory basis, considering the season of the year; in fact it seems probable that it will be difficult to increase the output very largely beyond the current production.

A Year Ago—Approach of the fall season the only constructive feature in the anthracite situation. Slightly firmer tone in bituminous though it is still a buyers' market. Exports continue large. Delayed buying at interior points expected to cause a congestion.

Business Opinions

Boston News Bureau—The railroad trainmen in agreeing to a mediation of their differences with their employers have at least shown a willingness to be reasonable. Mediation may not mean that a strike will ultimately be averted, but it is a step in the right direction. A close second in importance was the spectacular advance in wheat, the result of the poor condition of the crops as shown by the Government report issued on Tuesday after the grain markets had closed. There is, of course, no denying that the harvest outlook is poor this year, but with a fairly large carry-over from last year the farmer still will be as a big purchasing factor. And, of course, there is yet time for improvement.

Iron Age—Manufacturing consumers of steel are facing smaller demand for their products, in view of high prices. Implement makers count on a 25 per cent. falling off in their sales and possibly more. They contend that bars should be reduced rather than advanced. It is understood that recent contracts for bars for Europe provide that the full tonnage must be taken out, if not in bars, then in plates, shapes, or other products. A non-cancellation proviso has also been inserted in certain contracts with buyers at home. The greater part of the forgings and bars required for the large shell contracts recently placed with five important companies—amounting to nearly $100,000,000—has been bought, but Europe is still asking for steel for this year's delivery, which few mills are able to take on.

The American Wool and Cotton Reporter—The wool market has been quiet for the last week, but a firm undertone prevails, with an upward tendency. It is anticipated that buyers will give big orders in the woolen goods market when they have prices where they want them. This will necessitate purchasing much wool on the part of manufacturers.

Marshall Field & Co.—Deliveries for the last week have been much heavier than for the same week a year ago. Collections continue to be satisfactory. Manufacturing conditions have held prices firm with indications of a higher tendency. Manufacturers, wholesalers and jobbers are making preparations for the semiannual Market Week and Fashion Show—Aug. 7 to 12. It is expected this event will be most successful.

Bradstreet—Industry is active, the buying power of the general public is larger than ever before, and trade is in excess of any previous midsummer period. Exceptions to this are found only in parts of the Southeast, where storm damage has not yet been recovered from, and in parts of the Northwest, where disappointment at spring-wheat crop results has caused some small measure of cancellations. Generally the outlook is fairly satisfactory, though still lacking definite form as to the crop and labor outlook. The foreign trade situation has improved, iron and steel leading, and less is heard about the ending of war-order demands. Prospective European demand with the only moderate crop yields indicated here have already caused sharply higher prices for cereals and cotton. Consumption of both at home, of course, is breaking all records.

Dunn—Exceptionally gratifying reports regarding trade, industry and transportation are somewhat modified by less favorable news from the agricultural regions. Yet the reduced crop estimates, while accentuating the tendency toward wholesome conservatism, have not raised doubts as to the maintenance of the forward movement in business. In spite of various drawbacks and uncertainties, confidence in sustained economic progress is undiminished, the large increase in new enterprises testifying to strong faith in the future. Notwithstanding the magnitude of previous purchases, many interests are disposed to extend commitments further, being prompted to cover far-distant needs by fears of a growing scarcity of supplies and the possibility that prices may go still higher. Recoveries have occurred in certain lines that recently showed evidences of reaction, such as in steel and drygoods, while additional advances appear in commodities which thus far have given no signs of yielding. Some domestic consumers of steel who counted on abatement of war orders to bring continued recessions, and held off for this reason, have seen the foreign call remain remarkably heavy, and the question of available capacity for next year is now entering more largely into calculations.

ATLANTIC SEABOARD

BOSTON

Prices on Pocahontas and New River advance. Slow loading the rule and agencies conservative about promises. Georges Creek loading also slow. Pennsylvania grades advance materially. Anthracite shipments coming forward slowly.

Bituminous—The long-awaited turn in Hampton Roads prices has taken place; $3.25 has already been realized for spot coal f.o.b., and practically no options are being left out for October and November loading. Only a few shippers are making any quotations at all. The outlook is that Hampton Roads will have all the business the piers can take care of the balance of the season the way coal is being mined. Output is still being held down by labor shortages, but in spite of that the aggregate is even larger than last year.

Manufacturing in this territory is thriving and practically all the steam users are after their full quota of coal. In some quarters the excess of water power has had its effect, but it is realized the fall season is not far off and efforts are being made to accumulate fuel. The delays of the past 60 days have kept stocks lower than usual, but it is hard to see how supplies can be piled up under present conditions.

Pocahontas and New River continue in active request for export and for bunker use. On all sides the market seems to be reconciled to higher prices; the feeling is that coal is only getting its share of the wave of higher return that prevails on most commodities. A few large New England buyers are looking about to place extra orders, but with the turn in prices they are likely to postpone purchases. The impression among the trade is that purchasers will pay more before they pay less.

At the distribution points prices are also firmer for inland delivery. Some factors have declined taking any more contracts and spot coal is 15@20c. higher.

The Georges Creek shippers are not only suffering from slow movement coastwise and a shortage of boats, but the loading at Baltimore is slowing up. No new obligations are being taken on and much anxiety is felt among interests that have coal due them.

The Pennsylvania steam coals are also moving up in price, both spot and future. There is a growing demand in all directions, particularly since Hampton Roads dispatch has slowed up, and the better grades are commanding the highest figures since last winter. Just now there is also an extra movement all-rail in view of possible embargoes that it is intimated will soon be again in force. Two dollars is a price being made on high-grade Clearfields for delivery through the winter. Several operators have announced themselves "sold up" for the present.

Bituminous quotations at wholesale, f.o.b. loading ports at points designated, are about as follows, per gross ton:

	Philadelphia	New York	Baltimore	F.o.b. Mine
Clearfields	$2.40@3.00	$2.70@3.30	.....	$1.15@1.75
Cambrias and Somersets	2.70@3.15	3.00@3.45	.....	1.45@1.90
Georges Creek (contract)	3.07@3.17	3.37@3.47	$3.00@3.10	2.00@2.10

Pocahontas and New River, f.o.b. Norfolk and Newport News, Va., are $3@3.25. On cars Providence and Boston prices are $5.10@5.20.

Anthracite—Egg and stove are beginning to be in short supply at the loading ports, and this in conjunction with the slow movement of boats is seriously shortening up the receipts of domestic sizes at this end. Through the slow deliveries of New York shippers there is an extra pressure on Philadelphia, and now that more anthracite barges are freighting bituminous than in normal years from that port the outlook for New England dealers is not any too favorable.

At several points here the dealers have barely had their April and May quotas. The result is widespread anxiety over the prospect for fall and winter. This is particularly true of the dealers up the rivers which ordinarily close to navigation by Dec. 1.

NEW YORK

Anthracite business active. Prepared coals in good demand. Chestnut and pea sizes firm. Healthy condition continues in bituminous market. Prices slightly stiffer. Indications point to stronger market.

Anthracite—Mid-summer finds the anthracite trade at Tidewater active instead of in its usual dull condition. Everybody is busy and some shippers complain of a shortage of supplies. All of the prepared coals are in heavy demand. Egg and stove have been short for several weeks and now chestnut which has been a drug on the market is becoming scarce. At some of the upper ports it is not to be had.

The mines continue to operate at full capacity but with a decreased force. The storage plants which usually at this time of the year are being filled are now practically depleted. In addition some operators are being hampered by petty labor troubles such as button strikes.

In view of these conditions consumers are being urged to store their winter requirements of fuel. Some wholesale dealers predict a boom market by or shortly after Sept. 1, with premiums being offered for the domestic coals.

Pea coal is firmer. Very little is being sold at less than full price for the good grades. The cheaper coals are hard to move and concessions range from 10 to 15c.

Current quotations, per gross ton, f.o.b. tidewater, at the lower ports are as follows:

	Circular	Individual		Circular	Individual
Broken	$4.95	.....	Pea	$3.96	$3.75@3.90
Egg	5.35	$5.35	Buck	2.75	2.40@2.75
Stove	5.60	5.60	Rice	2.20	2.10@2.20
Nut	5.65	5.50@5.65	Barley	1.95	1.85@1.95
			Boiler	2.20	

Quotations at the upper ports are generally 5c. higher on account of the difference in water freight rates.

Bituminous—The healthy condition of the bituminous market continues. There is plenty of coal at Tidewater but there is no crowding. Prices are a trifle stronger with individual shippers. While the market is stronger than usual for this time of the year all indications point to greater strength by the first of the coming month.

Supplies at Tidewater were augmented the past week by the New Haven embargo but increased shipments by water were made to Long Island Sound points notwithstanding that freight rates are stiff with no hopes held out for a reduction.

Labor conditions in the mining regions are becoming serious. Some of the mines are closed down entirely and there is not much improvement looked for.

Some of the high volatile coals are practically out of the local market. No quotations could be had for certain coals early in the week. Prices on various grades show increases of about 5c. on the medium grades and from 10c. up on the high grades. Cheap coals have been quoted at $3.80 f.o.b. with no questions as to quality.

Current quotations on various grades, gross tons, f.o.b., Tidewater, follow:

	South Amboy	Port Reading	St. George	Mine Price
Georges Creek Big Vein	$3.50@3.65	$3.50@3.65	$3.50@3.65	$1.95@2.10
Georges Creek Tyson	3.10@3.30	3.10@3.30	3.10@3.30	1.55@1.75
Clearfield: Medium	3.00@3.20	3.00@3.20	.....	1.45@1.65
South Forks	3.30@3.50	.....	.....	1.75@1.95
Nanty Glo	3.10@3.20	.....	.....	1.55@1.65
Somerset County: Medium	3.00@3.10	3.10@3.25	3.10@3.25	1.55@1.70
Quemahoning	.....	3.00@3.10	3.00@3.10	1.45@1.55
West Virginia Fairmont	.....	3.10@3.20	3.10@3.20	1.30@1.40
Fairmont mine run	.....	3.00@3.10	3.00@3.10	1.20@1.30
Western Maryland	.....	2.95@3.00	2.95@3.00	1.40@1.45

PHILADELPHIA

Anthracite retail trade quiet, but mines production well taken. All sizes active except nut and pea. Collections poor. Bituminous shows activity, with some better prices.

Anthracite—From all outward appearances the trade is absolutely flat. The retail men will not have any deliveries of consequence to make until schools open in the fall, bringing with them the opening of many homes that have been closed against putting in the winter supply. There is no doubt that there will be heavy orders during the latter part of this month. It is indeed difficult work for salesmen to see the retail men these days, as the latter seem to have departed in a party to the shore leaving some attache in charge of the office.

Yet with all this seeming idleness the operators report that their entire production under present conditions is being absorbed. If the general public could actually realize the meaning of this statement they would have good reason to be alarmed. It is a fact nevertheless that with short working time and a shortage in the labor supply that the output of the mines is being fairly well taken care of with few exceptions.

To add to the difficulties of the mining situation a number of collieries have been drowned out for over ten days and have not entirely recovered.

The condition of prices remains good and the only cutting is on chestnut coal and an occasional shipment of pea. Even this is denied by the parties engaged in it, but it is learned that they use the somewhat doubtful subterfuge of billing the cut price in the form of a "commission." Stove is undeniably strong and does not meet the demand.

Another difficulty of mining has been the recurrence of the button strikes, which have broken out with seemingly greater vigor than ever and numerous mines have been closed down on this account.

Pea coal is not often offered at a reduced price and one of the largest individual operators who has been known to cut this size all summer recently issued orders to salesmen to offer nothing less than circular from now on, and while the demand for this size has improved it is nothing like it should be. It seems foolish to wait until September and October to pay full circular price.

Collections are bad on all sides. The retailers report many of their A No. 1 customers leaving the city without paying their bills and payment will not be had until late next month, when usually this phase of the business materially improves.

The prices per gross ton f.o.b. cars at mines for line shipment f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken	$3.60	$4.75	Buckwheat	$1.65	$2.55
Egg	4.05	5.15	Rice	1.00	...
Stove	4.30	5.40	Boiler	.90	1.80
Chestnut	4.40	5.45	Barley	.75	....
Pea	2.70	3.60			

Bituminous—The demand continues good for all grades of bituminous and in a number of instances there have been slight price increases, with the general tendency in that direction well continued. An interesting feature of the week's market is the large number of charters placed, being the biggest activity in that direction for many months. The prices per gross ton at the mines rule about as follows in this market:

Georges Crk. Big Vein	$1.95@$2.05	Fairmont gas, mine-run	$1.45@$1.55
South Fork Miller Vein	1.75@ 1.85	Fairmont gas, slack	1.20@ 1.25
Clearfield (ordinary)	1.40@ 1.50	Fairmont lump, ordinary	1.40@ 1.50
Somerset (ordinary)	1.35@ 1.40	Fairmont mine-run	1.25@ 1.35
West Va. Freeport	1.30@ 1.35	Fairmont slack	1.20@ 1.25
Fairmont gas, ¾	1.65@ 1.75		

BALTIMORE

Trade conditions grow tighter, cars and labor scarcity being especially evident. Heavy export movement. Anthracite men complain.

Bituminous—There is no doubt that the day of a soft market is over. Every 24-hr. period makes the tightening situation more patent. Labor is scarce and so are cars, and between the two the producing end is being squeezed to get out enough coal to meet contract obligations.

Prices to the trade are about as follows, at the mines, per gross ton: Georges Creek, Tyson, $1.75; Miller vein, $1.55; Quemahoning, $1.60; Somerset, $1.55; Freeport, $1.30@1.35; Fairmont, gas, three-quarter, $1.35; same, mine-run, $1.20@1.25; slack, $1.15.

Anthracite—Complaint is heard by many of the hard coal men that they are not getting their coal promptly. Not a few who had hoped to clear up the better part of the summer orders on their books before the middle of August, in order to stock up for the expected fall business, have been unable to do so.

Exports—Export business is booming. During the past week the total loading for foreign account was 33,136 tons, the largest total for many weeks past. The bottoms reporting in this trade also took 5,400 tons in bunker supplies.

HAMPTON ROADS

Exports moving in fair volume. Coastwise shipments increasing. Bunker business good. Stocks below normal. Some shippers short, causing delays to cargo vessels. Prices show sharp advance.

Tonnage continues to move foreign in fair volume, principally to Italy and the Plate. The west coast of South America is taking a good tonnage, also, three full cargoes having been shipped there through the Canal the past week. The Navy Department is taking a cargo now and then, the latest being the steamer "Blackheath," with some 7,200 tons for Tiburon, Calif. Coke is moving in small lots, in conjunction with coal cargoes. Coal freights for British steamers remain at the comparatively low levels of the past thirty days, though of course British tonnage is not available except for trades approved by their government. Neutral tonnage is therefore able to command higher rates, being unrestricted as to the trade. Reports from the other side indicate that Great Britain is unable to supply the French demands for coal. There are various rumors of French inquiries in this market, but it is not believed that any actual orders have been placed as yet.

Coastwise shipments are good with every indication of a continued increase. It is reported from New England that stocks are nominal and Hampton Roads shippers expect to move a good tonnage to that territory from now on.

Bunker requirements are heavy at all three of the terminals, and steamers are getting excellent dispatch considering the accumulation of cargo tonnage due to shortage of coal.

Prices have advanced and the market is strong as follows: Pocahontas and New River for cargo, $3@3.25 per gross ton; on track for local consumption, $2.75@2.85 per net ton; bunker coal, $3.30 per gross ton plus 10c. per ton trimming; anthracite, $7.50 per net ton, delivered in ton lots.

Railroad Tonnages—Dumpings over the local piers for the past five weeks compare as follows:

	Week Ending				
Railroad	July 8	July 15	July 22	July 29	Aug. 5
Norfolk & Western	114,026	173,347	168,108	139,132	201,133
Chesapeake & Ohio	91,311	.....	133,897	76,517	100,787
Virginian	94,016	90,989	73,870	80,341	84,569
Totals	299,353	.....	315,875	259,990	[386,489

Ocean Charters and Freights

VESSEL CLEARANCES

NORFOLK

Vessel	Destination	Tons
Tibagy[16]	Rio Janeiro,	3,237
Washington[16]	Genoa, Italy	6,870
Mexico[2]	Havana, Cuba	2,733
Ocland[2]	St. Thomas	4,784
Christoforos[16]	Genoa, Italy	5,615
St. Veronica[17]	Mollendo, Peru	6,315
Radcliffe[16]	Spezia, Italy	6,451
Ulysses[1]	Cristobal, C.Z.	12,029
Ed. W. Briry[2]	Lisbon	2,365
Virginia[16]	Genoa, Italy	3,913
C. A. Campbell[16]	Azores	2,041
Liv[10]	Rosario, A.R.	3,863
Sama[9]	Jamaica	1,633
B. Accame[16, 4]	Genoa, Italy	4,423
F. A. Davenport[16]	St. Michaels	1,053
Isthmian[3]	Antofagasta	6,782
St. Andrews[17]	Rio Janeiro	4,222
Luigi Ciampa[16]	Leghorn, Italy	4,670
Oceano[16]	Genoa, Italy	5,288
Phoebus[16]	Italy	4,560
Montebello[6]	Genoa, Italy	3,668
Good Hope[21]	Chile	5,707

NEWPORT NEWS

Vessel	Destination	Tons
Sverre[4]	Rio Janeiro	5,107
Mowinckel[4]	Havana, Cuba	4,381
A.W. Snow[3]	Teneriffe	1,039
B. H. King[4]	Pernambuco	1,467
Columbian[4]	Rio Janeiro	10,380
Panama Transp.[4]	Havana, Cuba	7,268

PHILADELPHIA

Vessel	Destination	Tons
Munorway	Havana	2,224
Nordsstjrnen	Havana	
Greenwich*	Valparaiso	
St. Andrews	Rio Janeiro	
Nordland[4]	Manzanillo	1,042
Hermod	Fort de France	
Rio Colorado	Rio Janeiro	

BALTIMORE

Vessel	Destination	Tons
Highbury	Argentina	6,491
Maria G.	Italy	1,573
Sangstad.	Honduras	2,550
F. J. Lisman	France	2,969
Skinfaxe	Costa Rica	1,727
Urkiola	Spain	4,701
Ardgryfe	Argentina	7,106
Plymouth	Egypt	6,019

* Coke.

[1] Atwater & Co.
[2] Baker Whiteley
[3] Barber & Co.
[4] Berwind-White
[5] C. G. Blake Co.
[6] Castner, Cur. & Bul.
[7] Ches. & O. Coal A. Co.
[8] Ches. & O. C. & C. Co.
[9] Crozer-Pocahontas Co.
[10] Dexter & Carpenter
[11] Flat Top Fuel Co.
[12] Hasler Brothers
[13] Houston Coal Co.
[14] Maryland C. & C. Co.
[15] New River Coal Co.
[16] Pocahontas Fuel Co.
[17] Smokeless Fuel Co.
[18] C. H. Sprague & Son
[19] White Oak Coal Co.
[20] Northern Coal Co.
[21] W. Virginia Coal Co.

OCEAN CHARTERS

Coal freight charters have been reported as follows:

BALTIMORE

Vessel	Destination	Tons	Rate
Absalom[1]	Port Limon	1,353	
Plymouth	Alexandria	3,354	
Wagama	R Janeiro	2,609	$15.75
Tenzan	R Janeiro	2,881	
St. Andrew	R Janeiro	1,899	

BALTIMORE

Vessel	Destination	Tons	Rate
Tenzan	R Janeiro		$16.50
Plymouth	Alexandria		
Absalom[4]	Port Limon		
Trehawke[4]	R. Plata		
G. D'Ali	Italy	3,400	

PHILADELPHIA

Vessel	Destination	Tons	Rate
Nordboen[1]	Cuba	4,200	
Munorway	Havana	2,224	
Nordland	Manzanillo	1,042	$10.00
Ilala	R. Plata	1,248	14.00[3]
Republic	Rio Grande		20.00[2]
Jerceler	Nassau		
Trainer	Halifax		3.25
Pendleton	Marseilles		22.00
R. W. Stevens	Lisbon		
Percella	Charlottetown		4.25[5]
Nardsjeren[4]	Havana		

VIRGINIA

Vessel	Destination	Tons	Rate
Siam	Bahia		$16.00[6]
H.F. Kreger	Lisbon		14.00[2]
Llandrindod	R. Plata	2,442	15.60
Ocland	St. Thomas		

ATLANTIC RANGE

Vessel	Destination	Tons	Rate
Glenorchy	R Janeiro		16.20[1]
Wagama	R Janeiro	2,609	15.75[2]
St. Andrews	R Janeiro		16.00

[1] August-September. [2] August. [3] And coke $20. [4] Private terms. [5] And discharge. [6] September.

OCEAN FREIGHTS

Since our last report a number of steamers were chartered to take coal to Brazil at varying rates, the last reported charter being at $16.50 Rio and $17 Santos. To other destinations very few charters have been completed and none of these reported.

We would quote freight rates on coal by steamer as follows:

West Coast of Italy	$27.60@28.80	Cienfuegos	$5.00@5.25
Marseilles	26.40 about	Port au Spain, Trinidad	5.50 about
Barcelona*[2]	22.80 about	St. Lucia	5.50 about
Montevideo	15.00@15.60	St. Thomas	5.50 about
Buenos Aires	15.00@15.60	Barbados	5.50 about
Rosario	16.80@18.00	Kingston	5.00@5.50
Rio Janeiro	16.25 about	Curacao[1]	4.75 about
Santos	16.75 about	Santiago	5.00@5.50
Chile (good port)	8.00@10.00	Guantanamo	5.00@5.50
Havana	3.80 about	Bermuda	4.25@4.50
Cardenas or Sagua	5.00 about	Vera Cruz	5.00@5.50
		Tampico	5.00@5.50

* Spanish dues for account of cargo. [1] And p.c. [2] Or other good Spanish port.

Note. Charters for Italy. France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

W. W. Battie & Co.'s Coal Trade Freight Report.

LAKE MARKETS

PITTSBURGH

Prompt market quiet but strong. Labor and cars somewhat short. Lake shipments fairly heavy.

Demand for prompt coal continues light but offerings are equally light and the market is strong, although not active. Shipments against contracts are heavy. Production is not up to maximum as men are rather scarce and those that are employed are not working hard by any means. Car supplies are no more than fair, although there is a slight improvement over conditions of a fortnight ago.

Lake shipments continue fairly heavy. The season is now half over and of course shipments will be much heavier in the second half than they have been in the first. Slack continues to hold up quite well in price despite the heavy production due to the screening of ¾-in. The circular price for mine-run remains at $1.50, but there is nothing to speak of being done on contract. A price anything like $1.50 represents a large advance since the first of the year.

Some news has come out as to low-priced contracts made early in the year. It appears that one or two of the preferred railroads were covered for the year on the basis of less than $1 a ton for mine-run. This, of course, represents a differential below the lowest that was done with industrial concerns.

We quote prompt coal quiet but strong as follows: Slack, 95c.@$1; mine-run, $1.35@1.45; ¾-in., $1.45@1.55; 1¼-in., $1.55@1.65, per net ton at mine, Pittsburgh district

BUFFALO

Bituminous uncertain and contradictory. Embargoes in effect again. Scarcity of men and cars. Demand uncertain. Anthracite moving faster by Lake. Sales slow.

Bituminous—Consumers are not trying to stock up, regardless of how uncertain the supply appears to be. It is agreed by shippers that conditions point to a light supply next fall and winter and prices are not likely to be any lower, but orders are hard to get. On the other hand if an order is obtained there is usually much delay in getting it filled and the movement by rail is slow, with prospects of becoming still slower. In addition to this, there are now reports of extended embargoes on the Eastern routes. The New Haven lines are already in bad shape and as a consequence the Boston & Maine is closed to coal shipments. Shippers who handle Allegheny Valley coal say that cars are very scarce all through t t district.

At the moment the shortage of miners is rather overshadowed by other difficulties. It looks as though the consumer was foolish n refusing to buy now, as he may not be able to get sup promptly when the car shortage becomes accentuated by moving of the crops.

Prices are fa ly steady, with slack scarce. Quotations:

	Pittsburgh	Allegheny Valley	Penn Smokeless
Lump	$2.95	$2.75	$2.80
Three-quarter	2.85	2.60	.....
Mine run	2.75	2.50	2.60
Slack	2.40	2.30	2.60

Prices are per net ton, except east of Rochester and Kingston, Ont., where they are per gross ton.

Anthracite—Sales promise to improve somewhat as the month advances but the trade needs cool weather to stimulate it. Reports from the Northwest indicate that the demand there is no better than it is here. Lake shipments have improved a little of late, but are not gaining on last season by any means. For the week five ports have been covered as follows: Chicago, 10,200 tons; Milwaukee, 17,000 tons; Sheboygan, 7,500 tons; Duluth and Superior, 41,900 tons and Fort William, 3,200 tons. The Lake anthracite shipments for July were 358,495 net tons, and for the season, 1,227,101 tons, as against a shipment of 1,870,390 tons to August last season. This is a falling off of about one-third, part of which has been made up by the coal sent to Erie for loading.

Following are August quotations for anthracite in the wholesale trade, f.o.b. cars, per gross ton:

Grate	$5.85	Chestnut	$6.35
Stove	6.10	Pea	5.00
Egg	6.10	Buckwheat	3.50

A reduction of 10c. per ton is allowed on all sales during the month.

CLEVELAND

Sudden drop in car supply. Slack prices increase. Prices on smokeless coal take big jump. Shortage in anthracite production.

The sudden drop in car supply in the fields that supply this market with coal has been felt keenly by slack consumers. The supply of cars is about 60 per cent. of normal on all roads. Mines running on this basis can take care of their coarse coal orders easily, but this market demands all the slack the mines can produce when running full. A good many plants crush mine-run coal in order to keep their boilers going.

Another condition that has affected the slack market is the fact that mines that are usually loading a great deal of domestic coal at this time are practically shut down for the want of orders. The retail dealers whom they depend upon for orders are out of the market until they can secure sufficient labor to unload cars. This does not only apply to the dealer located in large manufacturing centers but also to the dealer in the small town.

Smokeless coal, especially the mine run, has shown a decided improvement in price. The Tidewater market is paying $1.50 net for all the genuine No. 3 coal it can get, and Western buyers are now being forced to bid a higher price for any tonnage in this field.

Anthracite production for the month of July was away off on account of the shortage of miners and poor car supply, and salesmen report no trouble securing orders but much difficulty in filling them.

Following are the prices per short ton f.o.b. Cleveland:

	Three quarter	Mine-run	Slack
No. 8	$2.10	$2.00	$1.95@2.00
Cambridge	2.10	2.00	1.95@2.00
Middle District	2.00	1.90	1.85@1.90
Hocking	....	....	1.85
Youghiogheny	2.60	2.50	....
Pittsburgh	2.60	2.50	....
Pocahontas	....	3.05	....
Fairmont	2.10	2.00	1.95@2.00

DETROIT

Buying in the steam coal trade centers principally in small sizes. Demand for domestic stock is light. Advances in carrying rates get few boats for lake shippers.

Bituminous—Some of the wholesalers report a slightly more active interest in steam coal is developing. Orders continue of small size and are scattering in character. Consumers are chiefly interested in small sizes and the demand for nut, pea and slack is fairly well maintained at prices equivalent to 90c. at the mine and freight charge. Mine-run interests a lesser number of buyers, the price holding about $1.15 at the mine.

In the domestic trade, indifference is the most pronounced feature. Consumers are not ready to put in their stocks and retailers are waiting. There seems no excess of coal on tracks, at present, not enough, at least, to result in the stock being peddled at cheap prices.

Anthracite—Consumers of anthracite are displaying little interest in the market. Retail dealers have completed fewer deliveries than usual at this time. Wholesalers say the outlook indicates there will be difficulty in getting prompt delivery in the fall and late summer. Delays already are reported in shipments of stove size.

Lake Trade—While coal is coming from the mines to loading docks more freely than at any previous time this season, vessel capacity is seemingly becoming more difficult to get every day. The early season contract rate to Lake Superior ports is 30c. but with contract carriers unable to handle all the coal, advances are being offered.

One shipper is reported to have sought vessels on the basis of 50c. a ton to Fort Willian and Port Arthur and contracts at 40c. on cargoes to Duluth and Superior find few takers. Even more serious is the position of shippers having coal to be taken to Lake Michigan ports. On some cargoes 75c. has been paid from Lake Erie to Chicago and Milwaukee. Offers of $1 a ton to some of the smaller lake Michigan ports do not attract vessel owners.

The statistical report of St. Marys river canals for July, shows 366,900 short tons of anthracite and 2,360,962 tons of bituminous coal were moved through those waterways. This compares with 264,377 tons of anthracite and 1,791,047 tons of soft coal in June and with 315,364 tons of anthracite and 1,759,178 tons of soft coal in July, 1915. In July 1914 anthracite shipments were 431,193 and soft coal shipments 1,868,150 tons.

COLUMBUS

More demand for domestic sizes is the principal feature of the coal trade in Ohio. Steam business is brisk and Lake trade is still active.

With the stocking season advancing, operators and jobbers report a better demand for domestic tonnage. In fact, the market shows a much more hopeful tone in every way and prospects for the future are considered bright. Buying of domestic grades is good in the rural sections, showing quite a threshing demand. Rural dealers are also inclined to stock up more than are city dealers.

Prices are well maintained in every way and little cutting in order to force trade is reported. In fact, the market shows more strength than any time during the past 60 days. There is a better demand for the small sizes, which have shown a little weakness, owing to the large Lake trade.

Steam business is good and the tonnage used for manufacturing purposes is large. This is especially true of iron and steel plants. Manufacturing, however, is not restricted to that line but is gradually expanding in every way. Railroads are using quite a large tonnage for the movement of trains. Some disposition is shown on the part of large users to accumulate stocks.

The Lake trade continues active in every way and the amount being shipped to the head of the Lakes shows no falling off. Bottoms are rather scarce, excepting contract boats. Lake rates are high on tramp steamers. The docks at the head of the Lakes are generally free from congestion as the movement to the interior is active. Lake prices remain steady.

Production in several of the Ohio mining districts is curtailed because of car shortage. This is especially bad in the eastern Ohio field. Some shortage of cars is reported from southern Ohio. The tonnage from West Virginia is less because of car shortage.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomeroy	East Ohio		Hocking	Pomeroy	East Ohio
Re-screened lump..	$1.60	$1.70	.....	Egg.....	$1.30	$1.35	....
Inch and a quarter.	1.50	1.50	$1.40	Mine-run.....	1.15	1.20	$1.15
Three-quarter-inch	1.35	1.35	1.35	Nut, pea and slack.	.75	.80	.70
Nut.....	1.25	1.25	1.25	Coarse slack.....	.65	.70	.60

CINCINNATI

Growing strength in the steam market is noted. Continued hot weather discouraging to domestic business. Prices show a rising tendency.

While continued torrid weather has had a naturally depressing effect on the domestic side of the market, due to the difficulty in inducing domestic consumers to buy, other factors in the market have been all that could be desired.

Continued difficulty at the mines in securing an adequate supply of labor for full operation, and transportation troubles of several varieties, from a car shortage to embargoes and congestion at terminals, furnish supporting factors which would make for a strong market even in the absence of the healthy demand now noted.

With the excellent demand from various quarters, however, the market is in splendid shape. The increasing anxiety of large buyers is contrasted with the indifference of many operators and wholesalers to taking on additional orders just now, based in some cases on inability to supply any further immediate demand and in others on a belief in substantially higher prices later.

LOUISVILLE

Acute car shortage continues. Shipments much curtailed and consumers reporting distress. Steam- and gas-coal prices withdrawn. Domestic situation improving.

More floods, more or less local to eastern Kentucky and to the South, have added to the car shortage problems of important eastern Kentucky producing fields. The Bell, Harlan and Whitley fields have been hardest hit, although the Kentucky River field is reported to be feeling the stringency.

Numbers of the operators have withdrawn prices on steam and gas coals, having difficulty in keeping up with contracts or in really getting out shipments of consequence. The demand for domestic grades is improving, in spite of the heat and labor conditions. Western Kentucky labor conditions seem on the mend. Prices except those withdrawn are without change for the week.

COKE

CONNELLSVILLE

Market quiet with demand and offerings both light. Output restricted by indisposition of men to work full time. Spot foundry coke firmer.

While furnaces do not appear to be short of coke there is on the other hand no surplus offered in the market and it seems to be an even break between productive capacity and consumption. The production is of course far below the physical capacity of the coke region, the output being determined by what the men will do. Men are not plentiful and on some jobs, particularly drawing coke, they are putting in far less than a full week's work. Frequently a batch of ovens is drawn one day late, cutting down the output of such ovens one-third.

There is only occasional inquiry from consumers for spot furnace coke, not enough to establish a market. Operators claim the market is well fixed at $2.75, but this would only apply to consumers. Operators or brokers who could conveniently use a little more coke to apply on their contracts, but could not pay a fancy price, often pick up small lots at $2.50. There is no further interest in contracts.

Foundry coke is in moderate demand, about the same as formerly, but offerings are so light on account of labor scarcity, particularly for forking cars, that the market is quotable 25c. higher. We now quote: Spot furnace, $2.50@2.75; contract, $2.35@2.50; spot foundry, $3.25@3.50; contract, $3.25@3.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended July 29 at 417,055 tons, an increase of 3,775 tons, and shipments at 417,897 tons, an increase of 7,876 tons.

Buffalo—The state of the coke trade continues strong. Men are hard to get at the ovens and there is an additional demand, especially for the lower grades, to ship by water. Quotations are: $5.10 for foundry, $4.60 for furnace, $4.25 for high sulphur and $4.10 for stock coke.

Chicago—The Aug. 1 circular prices on domestic coke advanced 10c. per ton. The market is very strong, with nearly all grades selling at a premium. Byproduct ovens have a large amount of accumulated orders on hand unfilled. Prices per net ton of 2,000 lb., f.o.b. cars Chicago, are as follows:

Connellsville	$6.00@6.25
Wise County	6.00@6.25
Byproduct foundry	6.00@6.25
Byproduct domestic	4.95@5.30
Gas house	4.50@4.75

MIDDLE WESTERN

GENERAL REVIEW

Domestic sizes accumulate at mines. Retailers report acute shortages of labor. Steam coals strong.

The most interesting development in the Western market during the past week was the fact that prices were generally advanced 10c. per ton on the coarse sizes effective Aug. 1, despite accumulation of over 1,000 cars at Illinois mines of domestic sizes because of slowness on the part of retailers in absorbing the tonnage. Retailers cannot get men to unload coal and consequently cannot buy it.

Quotations for fine coal are still at a high level and no relaxation is noticeable in the demand for coarse steam sizes, although most of the manufacturing plants are running short-handed owing to workmen laying off because of hot weather. Others have found it advisable to close down for inventory—all of which tends to lessen somewhat the amount of steam coal used.

There is no burdensome amount of speculative stock arriving in Chicago, and little cheap coal is obtainable. While temperatures have moderated, retailers and consumers still show no disposition to buy storage coal. Some of the producers fear that continued holding off by the retailers will bring a deluge of orders later, when by reason of lack of cars and labor they will not be by any means in a position to meet requirements of the trade. They have again repeated their warnings to buyers to place orders now when there is a fair opportunity to fill them.

Lack of adequate labor supply is becoming the chief cause of complaint among operators and retailers. Shipments of coal via the Lakes are fairly well maintained and reports indicate that considerable coal is now being moved inland from the docks, so that it is predicted by close observers that it is doubtful if there will be sufficient stocks at the head of the Lakes by the time navigation closes to supply Northwestern needs next winter.

Should the Northwest have a severe winter like last season, increased all-rail shipments to that territory will be of large volume. Although movement of coal on account of the threatened railroad strike has not increased appreciably, operators evidence much interest in the outcome of the apparent deadlock which now exists between the trainmen and railroad officials. Some railroad officials in this territory expect there will be trouble and possibly a strike of considerable duration before the controversy is settled.

Some mines which have been operating steadily on steam coal have reported acute car shortages.

CHICAGO

Domestic demand in Chicago very quiet. Screenings heavily absorbed. Smokeless greatly improved. Anthracite lifeless.

Some Illinois mines producing steam coal exclusively have been idle five out of seven working days on account of no cars being available. This is an indication of what is in store for the operators this fall when the demand becomes stronger.

Notwithstanding heavy accumulation of domestic sizes at a number of southern Illinois mines, no concessions have been

made in price. Coal is being held at the mines until such time as the retailers can secure sufficient labor to unload it. Williamson County operators are shipping more domestic coal than some of their neighbors, and Saline County mines are still specializing on steam coal.

Screenings have been in strong demand from the Springfield district this week. While current domestic shipments are light, many orders are entered for fulfillment at the end of the month. In the Peoria district a strong demand still exists for fine coal which is shipped as fast as produced.

Prices on Indiana domestic sizes remain unchanged but dealers look for a large August trade by reason of the common knowledge that autumn will find the situation warranting advances beyond the prices for that season last year. Orders for domestic coal are needed because the demand for screenings is beyond the output of lump.

Certain grades of lump are now being quoted at approximately 10c. above the levels prevailing 30 days ago, and price cutting is entirely absent. The harvest demand for Clinton coal has been heavy, while Knox County operators have been confining their production mostly to steam coal.

The smokeless market seems to show more strength. Spot mine-run is becoming increasingly scarce, while less all-rail lump and egg is being received. Shortage of labor and cars at the mines is the reason for lessened shipments to this territory. On the first of the month the circular price of mine-run was advanced to $1.50. Spot lump and egg are not so strong. Pennsylvania smokeless has been steady at a higher range of prices.

Sales of anthracite are far below what should be a normal volume of business at this time of year. The retail trade is still hanging back despite warnings from wholesalers that there is apt to be a shortage of supply later. Some delays have already been experienced in securing stove coal. Buying for August delivery so far is light and the market is lifeless.

Quotations in the Chicago market are as follows, per net ton, f.o.b. cars mines:

	Williamson and Franklin Co.	Springfield	Sullivan County	Clinton	Knox and Greene Cos.
Lump	$1.65@1.75	1.60	$1.55@1.70	$1.50@1.60	$1.50
Steam lump	1.35	1.30@1.35	1.30@1.35	1.45@1.50	1.30
2½ and 3-in. lump	....	....	....	1.45@1.55	1.35@1.45
1¼-in. lump				1.45@1.50	
Egg	1.65@1.75	1.25	1.35@1.40	1.60@1.65	1.50
Nut	1.55	1.25	1.25@1.35	1.50@1.60	1.35
No. 1 washed	1.60@1.75	....	....	....	....
No. 2 washed	1.50@1.55	....	....	....	....
No. 1 nut	1.75	....	....	....	....
No. 2 nut	1.50@1.55				
Mine-run	1.25	1.15	1.15	1.25@1.30	1.15@1.25
Screenings	.90@1.00	.90@ .95	.90@ .95	.95@1.00	.95@1.00

	Harrisburg & Saline Co.	E. Kentucky	Pocah. & W.Va.Smok'l.	Penna. Smokeless	Hocking
Lump	$1.60@1.75	$1.60@2.25	$1.90@2.00	$1.70@2.00	$1.70@1.80
1¼-in. lump	1.30@1.35	....	....	....	1.60
Egg	1.60@1.75	1.50@1.75	1.90@2.00	1.70@2.00	1.50@1.65
Nut	1.55	1.15@1.30	1.75	1.50@1.75	....
No. 1 washed	1.60@1.75	....	....	....	....
No. 2 washed	1.55	....			....
Mine-run	1.25	1.10@1.25	1.35@1.50	1.35@1.50	1.25
Screenings	.90@1.00	.90@ .95	....	....	....

ST. LOUIS

Domestic buying light partly because of the continued hot weather. Steam demand good. Car shortage being felt in some fields. Anthracite dull.

The continuation of the hot wave prevents domestic buying to a great extent. The season is getting so far advanced that the dealers are forced to place some orders. Business from domestic sources is much better, especially for the high-grade coals.

As the season advances it becomes more apparent that there is going to be a big rush and that cars are going to be short. In spite of the fact that everybody is reporting dull business and that there has been little domestic buying, mines on the whole have managed to keep running about four days a week. This is considered a pretty good tonnage for this time of year. Even under the most advantageous conditions mines average five days a week, and even a small car shortage brings the maximum output to four days a week. It begins to look therefore as if there was just as much coal being mined at present as will be produced during the rush months.

Considering there is no domestic buying at the present to amount to anything and that there will be a big rush a little later on, it looks as if there will be a big jam for coal and consequently much higher prices than are anticipated. A slight car shortage is being felt in a number of fields and on a number of roads. In fact, with the exception of the C. B & Q. and the Illinois Central, none of the roads have enough cars to more than barely go around. The Iron Mountain is at least 20 to 25 per cent. short at the present time.

In Williamson County a large part of the mines are on the Iron Mountain R.R. and all of these are running as full as the car supply will permit. There is a fair sprinkling demand on Williamson domestic coal throughout the country and the demand from the big cities is beginning to come in also.

Franklin County operators are beginning to get in considerable domestic business from all directions, and in another few days the whole county will practically be running full time. Franklin County operators have sprung a surprise on the trade by announcing their September price will be $1.90 on domestic sizes with the advice that the demand is heavy and the car supply will undoubtedly be short.

This is rather a surprise as nearly everyone has figured the price would be $1.85. This had been unofficially announced for several months. A good many of the wiseacres in the coal trade have been claiming that Franklin County people were getting their price too high and that they would have to drop it, but it begins to look as if the shoe was on the other foot.

Anthracite has been moving fairly well, though no particular rush has been noticed on any size at the present time.

The market is quotable on the following basis per net ton, f.o.b. mines:

	Franklin County	Williamson	Staunton and Montgomery	Intermediate	Standard
6-in. lump	$1.75	$1.35@1.65	$1.35	$1.35	$1.00
6x3-in. egg	1.75	1.35@1.65	1.25	1.35	1.00
3x2-in. nut	1.75	1.35@1.65	1.25	1.35	1.00
No. 2 nut	1.55	1.20	1.10	1.00	.90
No. 3 nut	1.40	.....	.....	.....	.....
No. 4 nut	1.30	.....	.....	.....	.....
No. 5 nut	.75	.....	.....	.....	.....
Screenings	.90	.80	.85	.85	.85
2-in. lump	.....	.....	....	....	.90
Steam egg	.....	.....	.....	.....	.....
Mine-run	1.25	1.10	1.10	1.10	.90
Washed	.....	.....	.....	.....	.....
No. 1 nut	.....	1.65	1.50	1.50	1.50
No. 2 nut	.....	1.55	1.40	1.40	1.40
No. 3 nut	.....	1.30	1.30	1.30	1.25
No. 4 pea	.....	1.25	1.20	1.20	1.15
No. 5 slack	.....	.70	.75	.70	.70

KANSAS CITY

Car shortage, and a desire on the part of large users to store almost any kind of coal they can get against the possibility of a railroad strike, have added to the already rather strained local situation, and stiffened coal prices. While there has been no advance in quotations so far, it is predicted that advances of 50c. to a dollar may be made soon on Kansas coal. Shipments of Pennsylvania anthracite are ten days slow. At Springfield, Mo., local advances of 25c. a ton have been made.

PRODUCTION AND TRANSPORTATION STATISTICS

BALTIMORE & OHIO R.R.

The following coal and coke tonnage was moved over the Baltimore & Ohio R.R. and affiliated lines during the month of June, 1916 and 1915:

	June 1916	June 1915
Coal	2,934,937	2,883,959
Coke	352,092	329,130
Total	3,287,029	3,213,089

ANTHRACITE SHIPMENTS

Shipments of anthracite for the month of June, 1916, as reported to the Anthracite Bureau of Information at Wilkes-Barre, amounted to 5,636,975 long tons, as compared with 5,547,899 tons in May of this year and with 5,459,610 tons in June, 1915. The increase in June, 1916, over the same month of 1915 was 177,365 tons, and as compared with May, 1916, the increase was 89,076 tons.

Anthracite shipments for June and for the first half-year of 1915 and 1916 were as follows:

	June 1916	June 1915	6 Months 1916	6 Months 1915
Phila. & Reading	1,087,183	852,411	6,322,998	5,413,271
Lehigh Valley	1,000,553	988,253	5,830,559	6,299,848
Cent. R.R. of N. J.	633,572	609,127	3,447,585	3,798,849
Del. Lack. & West.	873,278	888,399	5,106,958	4,568,608
Del. & Hudson	580,046	697,894	3,559,974	3,803,792
Pennsylvania	482,239	446,690	3,069,431	2,969,954
Erie	666,529	693,089	4,013,663	3,747,082
Ont. & Western	154,089	140,239	979,848	993,900
Lehigh & New Eng.	261,711	143,508	1,192,874	733,687
	5,739,200		33,523,890	
Deduction	102,225		102,225	
	5,636,975	5,459,610	33,421,665	32,328,991

Coal on hand at Tidewater shipping ports on June 30 amounted to 393,235 tons, as compared with 401,946 tons in May.